NENA Standard for NG9-1-1 GIS Data Model

Abstract: This document defines the GIS data information, formats, requirements and related information used in NENA Next Generation 9-1-1 (NG9-1-1) Core Services (NGCS).

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1 Executive Overview

Purpose and Scope

This document defines the Geographic Information Systems (GIS) Data Model, which supports the NENA Next Generation 9-1-1 (NG9-1-1) Core Services (NGCS) of location validation and routing, both geospatial call routing or to the appropriate agency for dispatch. This model also defines several GIS data layers (layers) used in local Public Safety Answering Point (PSAP) and response agency mapping applications for handling and responding to 9-1-1 calls.

The data structures defined in this document are related to, but different from the data structures defined in NENA-STA-010 [1], Appendix B. Appendix B describes the Spatial Interface (SI). The purpose of the SI is to provision a functional element (e.g. the Emergency Call Routing Function) with GIS data. In contrast, this Data Model document describes the structure (e.g. field names, field data types, domains) of GIS data. Care has been taken to ensure that this Data Model is compatible with the SI provisioning process.

Spatial (GIS) data drives NG9-1-1. Spatial data is often grouped into layers or feature classes. Layers are homogenous collections of common features, each having the same spatial representation and a common set of attribute columns. Spatial data in this document consists of the following vector (discrete) layer types:

- Points - Discrete locations such as address points, premise locations, and hydrants
- Lines - Linear features such as roads, rivers, and railways
- Polygons - Geographic coverage areas such as PSAP Boundaries, Emergency Service Boundaries, and cities

The ***Required*** layers defined in this document relate directly to NG9-1-1 location validation, geospatial call routing or to the appropriate agency for dispatch, public safety mapping applications, and other related functions. ***Strongly Recommended*** layers may be used for location validation and geospatial call routing or to the appropriate agency for dispatch based on implementation(s) as well as for public safety mapping applications. The ***Recommended*** layers pertain to public safety mapping applications only. However, it is important to note that public safety mapping applications may utilize all layers detailed in this model.

Required and ***Strongly Recommended*** layers are utilized by the Emergency Call Routing Function (ECRF) and the Location Validation Function (LVF) and can be used by other public safety functions. The ***Recommended*** layers will not be provisioned into the LVF or the ECRF, but are beneficial for PSAP map display and 9-1-1 call taking.

This GIS Data Model and the NG9-1-1 system rely on standardized, accurate, and up-to-date GIS data. This document updates previous GIS Data Models for use in the NG9-1-1 system while remaining backwards compatible with existing Enhanced 9-1-1 (E9-1-1) GIS data needs.

The NG9-1-1 system makes use of a new location conveyance format, called the "Presence Information Data Format-Location Object" or PIDF-LO. The PIDF-LO serves as the representation of the location of the device calling 9-1-1 and allows for civic and geospatial information. PIDF-LO

is an international format. The United States profile/version of PIDF-LO for civic locations is the Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

This document conforms to CLDXF for the representation of addresses in United States NG9-1-1 environments. However, there are fields described in this document that provide additional information beyond what CLDXF describes.

This GIS Data Model for NG9-1-1 is designed to support the location conveyed in the PIDF-LO so that it supports both validation of the location information against the local 9-1-1 Authorities' GIS data as well as routes the 9-1-1 call to the appropriate responding PSAP. The process of validating the location information that is contained in the PIDF-LO occurs in the LVF of the NG9-1-1 system before the call is made. Using the location information within the PIDF-LO to route the 9-1-1 call to the appropriate PSAP, takes place within the ECRF of the NG9-1-1 system.

The LVF and ECRF require standardized GIS data to perform their respective roles. GIS data provided in accordance with this standard are used as input to the SI. The SI's role is to then provision the LVF and ECRF (and other Functional Elements). The Master Street Address Guide (MSAG) Conversion Service (MCS) will also make use of the information contained in the GIS data, in particular legacy attributes. In addition, public safety mapping applications use these GIS datasets, allowing the PSAP to properly view the location of a 9-1-1 call on the map display and dispatch the correct emergency service(s) to the appropriate location.

The primary reasons to implement this standard are to:

- Promote the creation of complete, consistent, high quality GIS data for use within NENA NG9-1-1 systems
- Establish standardized GIS data provisioning requirements and structure for all users
- Establish provisioning guidelines for GIS data needed to support existing E9-1-1 systems, while transitioning into NG9-1-1 systems
- Enable validation of the 9-1-1 civic location information against the local 9-1-1 Authorities' GIS data using the LVF
- Enable routing of the 9-1-1 call to the appropriate destination, using the local 9-1-1 Authorities' GIS data provisioned to the ECRF
- Provide the data to determine the correct emergency responding agencies
- Enable compatibility and interoperability between GIS datasets while standardizing consistent data elements for software

Benefits

Adherence to this document provides a standardized, interoperable GIS data model that can be used nationwide. This benefits users and providers of GIS data in the following manner:

- Enables the validation of civic locations before a 9-1-1 call is made
- Provides the data structure that allows the NG9-1-1 functionality that routes calls to the correct destination

- Maintains or improves support for accurate plotting of 9-1-1 calls in public safety mapping applications for call handling purposes
- Provides a framework to help migrate existing GIS datasets to NG9-1-1 systems
- Streamlines data maintenance
- Enhances interoperability and data sharing
- Reduces confusion and ambiguity that can result from unstandardized data

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These definitions are based on IETF RFC 2119.

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Reason for Issue/Reissue

NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

Document Number	Approval Date	Reason For Issue/Reissue
NENA-STA-006.1-2018	06/16/2018	Initial Document

2 Technical/Operational Description

2.1 Background

The NENA Next Generation (NG9-1-1) GIS Data Model meets the demands and needs of a NENA i3 NG9-1-1 system, as described in NENA Detailed Functional and Interface Standards for the NENA i3 Solution (NENA-STA-010) [1], while permitting backward compatibility with existing E9-1-1 systems. This GIS Data Model can be used with today's E9-1-1 location conveyance format (Automatic Location Identification (ALI)), and the Next Generation 9-1-1 location conveyance format (PIDF-LO). PIDF-LO is the Internet Engineering Task Force (IETF) Presence Information Data Format-Location Object as defined in the IETF Request for Comments (RFC) 4119 [3] and extended by RFC 5139 [4] and RFC 6848 [5]. NENA has adopted the PIDF-LO as the means of conveying location information within the NG9-1-1 system.

In an NG9-1-1 system, the location of the IP endpoint supporting the fixed or nomadic calling device is validated against the local 9-1-1 Authorities' provisioned GIS data by the Location Validation Function (LVF).

This same local provisioned GIS data is used with the Emergency Call Routing Function (ECRF). The ECRF uses the location of the call (civic or geodetic) to determine, primarily, to which PSAP the call should be routed, based on the local 9-1-1 Authorities' GIS data. The ability to perform validation of locations and routing of an emergency call will depend on the currency, standardization, quality, and accuracy of the GIS data being used. The local 9-1-1 Authorities' GIS data is used in validation, routing, and location delivery within NG9-1-1 to accomplish the same functions as the MSAG, ALI, and Selective Router perform in E9-1-1.

While this GIS Data Model is specific to the United States, NG9-1-1 is designed to interoperate with other 9-1-1 systems, across a county, across a state, across North America, and throughout the world. In order to obtain this level of interoperability, strict adherence to standards is REQUIRED. Being able to transfer a 9-1-1 call to another PSAP, or to assist other PSAPs in times of emergencies depends on the core routing and validation database, the provisioned GIS data within the LVF and ECRF, and meeting and adhering to the standards in this document.

2.2 Metadata

Metadata is a file of information that captures the basic characteristics of the data and information resource. It represents the *who, what, when, where, why,* and *how* of the resource. Metadata is strongly recommended to be included and available for each GIS data layer described in this document.

The Content Standard for Digital Geospatial Metadata states that non-Federally authored standards that are endorsed by the Federal Geographic Data Committee (FGDC) have the same status as FGDC developed standards. ISO 19115 and the associated standards are endorsed by the FGDC. Federal and other agencies are encouraged to transition to ISO metadata as their agencies are able. Current FGDC metadata standards, including references to ISO Standards, may be found at: https://www.fgdc.gov/metadata/geospatial-metadata-standards.

2.3 Standardized Data Fields

Data domains must be utilized to ensure that information is not lost when merged with other datasets and to ensure interoperability across all systems. In some fields, only certain values are accepted; therefore, any data outside of this format MAY be ignored or replaced with a null value. Regardless of how the data is being maintained locally, data SHALL be provided in accordance with this standard when exported. In the United States, attribute values other than those within the "domain" of allowed values will not be recognized. Non-standardized attributes will lead to validation, routing, and interoperability problems. Canadian equivalents for the data domain would be valid in Canada.

In the current E9-1-1 system, GIS and MSAG data are usually contained within a jurisdiction or region, and as long as the data is consistent within that region, it does not matter how closely it conforms to a data standard. For example, some jurisdictions keep non-numeric prefix and suffix information in an address number data field.

In NG9-1-1, data may not be confined within a jurisdiction or an area. In disaster or overload conditions, calls may be answered out of area. Data may be consolidated into regional and/or statewide databases. For these reasons, it is essential that ALL jurisdictions define their GIS data layers and attributes as they are specified in this NENA NG9-1-1 GIS Data Model Standard. While this change may mean additional effort for many jurisdictions, it is important that every GIS conform to the GIS Data Model Standard contained in this document, in order to realize the many benefits of interoperable data and systems.

2.4 NENA Globally Unique IDs (NGUID)

NENA Globally Unique IDs (NGUID) are REQUIRED for all GIS data elements. NENA Globally Unique IDs SHALL be generated and maintained within a GIS database by combining a 9-1-1 Authority-generated "locally assigned ID", which can be numeric and/or text, and the "Agency Identifier" (a domain representing that authority, as defined in NENA-STA-010 [1]) of the 9-1-1 Authority, into a new single ID. For example, a road with a locally unique ID of RCL12085303, combined with an Agency Identifier of county.tx.us, would result in an NGUID of RCL12085303@county.tx.us.

The local agency maintains the Agency Identifier, which is a domain name as defined in STA-010. The domain name is obtained from any Domain Name System (DNS) registrar. NENA Globally Unique IDs MUST exist for each feature record within the GIS.

The NGUID examples in this document use a prefix suggestive of the layer the NGUID is found in. For example, RCL for Road Centerline, followed by a locally assigned ID. The inclusion of the prefix would ensure the locally assigned ID is locally unique across all layers. This locally unique ID and the domain name would ensure the NGUID is globally unique.

Each NGUID should be stable for as long as possible, so that it supports the reporting and resolution of errors from a quality control process, including the discrepancy reporting.

2.5 GIS Data Format

GIS data can be represented in a growing number of different GIS data file formats. In some cases, a GIS data file format can also be "versioned" which can create problems even when an entity believes it is fully-equipped to read a particular format from another entity. Due in part to the dynamic nature of GIS data file formats and in part to the variety of formats that an entity may or may not be in a position to support with their chosen GIS, this standard currently places no requirement on the GIS data file format to use for information exchange. This standard does however place requirements on the field names used, the properties of each field, and specific guidance on the attribution to be placed within the fields of an entity's chosen GIS data file format.

In many cases, when an entity is exchanging GIS data with a vendor, the vendor's requirements will drive the use of a particular GIS data file format. When exchanging GIS data between entities, it is expected that the entities will coordinate to ensure the receiving entity can read the GIS data file format provided. What should be consistent with GIS data exchange in an NG9-1-1 environment, regardless of the GIS data file format used for the exchange, are the naming conventions of each field in each layer, as well as the accompanying properties of each field described within this standard. This should be true whether the exchange is between a public safety entity and its vendor(s) or between one or more public safety entities and/or authoritative GIS sources. It is anticipated that by ensuring consistency at the field level, entities will be able to share information with any other public safety entity using a mutually-agreed-upon GIS data file format and that the information received will not be misinterpreted, or perceived as malformed by the recipient, in that exchange.

Within Section 3, GIS Data Model Layers, a table is provided for each layer with a "Descriptive Name" column for the field along with a REQUIRED "Field Name" column. The "Descriptive Name" column provides a fully-spelled-out name that is intended to be used when referencing other NENA documentation that uses the same fully-spelled-out names. The "Field Name" column contains the specific field names to assign within each layer and is intended to be used when exchanging GIS data between one or more entities for the purposes of NG9-1-1. Other columns within these tables provide guidance on the use of attributes within the field such as mandatory/conditional/optional use requirements and data type and length requirements. Entities are also encouraged to refer to Section 4, Detailed Description of Field Names and Associated Attribute Data for more guidance on the fields. In some cases, it may also be necessary to reference NG9-1-1 United States CLDXF Standard (NENA-STA-004) [2] for certain fields relating to addressing.

It is important to note that an entity need only be capable of exporting their GIS data in a GIS data file format that meets the field naming convention, mandatory/conditional/optional use requirements, and type and width requirements. This could be handled through the use of scripts, field mapping processes, or other geoprocessing tasks that, once built, need not be changed and may be reused again and again so long as the entity's internal GIS data model does not change. It is not expected that every entity will use the GIS data model described within this standard for its day-to-day internal use and maintenance but it is expected that each entity will be capable of exporting their internal GIS data model into a given GIS file format that complies with this standard as frequently as may be necessary. Alternatively, some entities may opt to use the guidance

provided within this standard for the development of their internal GIS data model and use it for day-to-day use and maintenance. This is, of course, acceptable and has an added benefit in that it eliminates the need for the previously mentioned export process.

2.6 Spatial Reference

While local GIS data may be kept in any projection desired, prior to loading the data into the Emergency Call Routing Function (ECRF) or the Location Validation Function (LVF) the data MUST be in the following spatial reference:

- Coordinate Reference System and Datum – Use of the World Geodetic System of 1984 (WGS84) [6] is required for GIS information within the ECRF/LVF. All geodetic data in i3 uses WGS84 as referenced in NENA-STA-010 [1].
- Geodetic parameters for WGS84 are specified by the European Petroleum Survey Group (EPSG) for both 2-dimensional and 3-dimensional geometries.
    - For 2-dimensional geometries the geodetic parameters are required to follow EPSG::4326.
    - For 3-dimensional geometries the geodetic parameters are required to follow EPSG::4979.

Note: WGS84 (GPS) elevation is measured as height above the ellipsoid, which varies significantly from height above the geoid (approximately Mean Sea Level).

Recognizing that conversion always introduces some error, it is recommended that NG9-1-1 systems use WGS84 natively. As an example, if one is using GIS software and the North American Datum (NAD) of 1983, the NAD 1983 to WGS84 transformation SHALL be used. Regardless of the projection used by the native data, any re-projection to WGS84 will require transformation steps. These transformation steps will minimize error and reduce or eliminate the chance of creating unnecessary overlaps and gaps. The transformation steps will vary depending on your native projection and the GIS software used for data development and maintenance. Advice from a geodesist, registered surveyor, or your Spatial Interface (SI) provider is recommended for minimization of transformation errors. Projection and transformation process information for each GIS data layer MUST be included in the metadata.

2.7 Horizontal Accuracy

The horizontal accuracy of the GIS data layers SHOULD meet the National Spatial Data Infrastructure's (NSDI) "National Standard for Spatial Data Accuracy" [7] at a scale of 1:5000. This equates to a horizontal accuracy of +/- 13.89 feet at 95% confidence.

The accuracy of +/- 13.89 feet is a goal that SHOULD be pursued. Funding and resources will dictate how long it will take the layers mentioned in this document to achieve that goal. While it may not always be possible to collect features to this degree of accuracy, it is a goal that should be pursued. As funding and resources allow, all features SHOULD achieve an accuracy better than 1:5000.

3 GIS Data Model Layers

Each GIS data layer is denoted in this document as one of the following:

REQUIRED – These layers MUST be available for the ECRF and LVF to function, and are required for call taking and dispatch operations:

- Road Centerlines
- Site/Structure Address Points
- PSAP Boundary
- Emergency Service Boundary (this MUST include Law, Fire, and Emergency Medical Service (EMS) as separate layers)
- Provisioning Boundary

Strongly Recommended – These layers may aid in the functionality of the ECRF and LVF and are strongly recommended for call taking and dispatch operations:

- Street Name Alias Table
- Landmark Name Part Table
- Complete Landmark Name Alias Table
- States or Equivalents
- Counties or Equivalents
- Incorporated Municipality Boundary
- Unincorporated Community Boundary
- Neighborhood Community Boundary
- Other Emergency Service Boundaries (these MAY include, but are not limited to, Poison Control, Forest Service, Coast Guard, Animal Control, etc.)

Recommended – Other layers in this document that complete the minimum recommended GIS data for NG9-1-1 and E9-1-1 call taking and dispatch operations:

- Railroad Centerlines
- Hydrology Line
- Hydrology Polygon
- Cell Site Location
- Mile Marker Location

The data structures defined in this document are related to, but different from the data structures defined in NENA-STA-010 [1], Appendix B. Appendix B describes the Spatial Interface (SI), that is a subset of this NG9-1-1 GIS Data Model. The purpose of the SI is to provision a functional

element (e.g. the ECRF) with GIS data. In contrast, this Data Model document describes the structure (e.g. field names, field data types, domains) of GIS data. If fields are not included within locally maintained GIS data, the 9-1-1 Authority or its designee must ensure that the data matches the model present in NENA-STA-010 [1], Appendix B, prior to the data being provided to the SI (by manual or automated means).

Locally maintained GIS data layers are REQUIRED to include all Mandatory data fields within this GIS Data Model, but are NOT REQUIRED to include Conditional or Optional data fields if no data exists to be populated within the Conditional or Optional data fields. If there are no records in the entire database for a specific Conditional or Optional data field, then the data field itself is NOT REQUIRED. Local policy may dictate that all data fields be included in the structure regardless if data exists.

As indicated below, the terms "Mandatory", "Conditional", and "Optional" refer to the data field content (the attribute values), not the data field itself.

The complete attribute definitions shown in the GIS data layer tables are described and defined in Section 4, Detailed Description of Field Names and Associated Attribute Data.

In the GIS data layer tables below, each layer has a heading of Descriptive Name, Field Name, Field Width, M/C/O, and Type.

The "Descriptive Name" is provided to clarify the intent of the information contained in the "Field Name."

The "Field Name" column gives the standardized GIS data field name that MUST be used. While local entities MAY use their own field names for internal processes, utilization of GIS data within and between the NG9-1-1 system functional elements MUST conform to this standard structure.

Field widths represent guidelines for interoperability. Local implementations MAY use smaller maximum widths but their emergency call processing systems MUST be capable of managing the listed widths when handling out-of-area calls. A GIS system that allows longer widths must be used with great care as those attributes which exceed these widths may be truncated.

The "M/C/O" column is used to specify whether the attribute information for individual data fields is **M**andatory (**M**), **C**onditional (**C**), or **O**ptional (**O**). The definitions and values in these fields may not be the same as those used in the CLDXF document (NENA-STA-004) [2]. Software implementers MUST implement the database attributes in conformance with CLDXF.

In regards to populating the data fields:

- **Mandatory** – An attribute value MUST be provided for the data field for each record. The data field MUST NOT be blank.
- **Conditional** – If an attribute value exists, it MUST be provided. If no value exists for the attribute, the data field is left blank.
- **Optional** – An attribute value MAY or MAY NOT be provided in the data field.

In the GIS data layer tables, the "Type" column indicates the type of data used within the data field and attributes.

- **P** – Printable ASCII characters (decimal codes 32 to 126). Case is not important, except in legacy fields which require upper case as per NENA 02-010, NENA Standard for Data Formats for 9-1-1 Data Exchange & GIS Mapping [8].
- **E** – UTF-8 restricted to character sets designated by the 9-1-1 Authority, but not including pictographic characters.
- **U** – A Uniform Resource Identifier (URI) as described in Section 7.9, Abbreviations, Terms, and Definitions, and defined in RFC 3986 [9], and also conforming to any rules specific to the scheme (e.g. sip:, https:, etc.) of the chosen URI.
- **D** – Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record the local date/time format in a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].
- **F** – Floating (numbers that have a decimal place). There is no defined field length of a floating number; it is system dependent.
- **N** – Non-negative integer

This document substantially refers to US standards; it is expected to be extended to Canada in a future edition. Additional future work on this Standard will include address location polygons, revision of the Cell Sector Location data layer, and movement to a true relational database structure.

Additional GIS data layers and data fields may be used as needed to best meet local purposes and needs. However, only those layers listed below and the associated attribute data shown in the layers provided in this document will be utilized for the loading and provisioning of GIS data for the LVF, ECRF, and MSAG Conversion Service (MCS) functions within NG9-1-1 as described in NENA Detailed Functional and Interface Standards for the NENA i3 Solution (NENA-STA-010) [1].

3.1 Road Centerlines – REQUIRED

Road centerlines represent the estimated centerline of a real world roadway. GIS road centerline arc-node topology is associated with attribute data containing information on street names, address ranges, jurisdictional boundaries, and other attributes. The Road Centerline layer is an integral part of any public safety GIS due to its versatility and its use for:

- Querying and geocoding of civic addresses based on dual (left/right) address ranges
- Tactical map display
- Map and attribute viewing
- Map production
- Location and driving directions

- Integration of network topology to allow vehicle routing, drive time analysis
- Integration of spatially related attributes for advanced applications including those focused on public safety, asset management, planning, utilities, and public works

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Road Centerline NENA Globally Unique ID	RCL_NGUID	M	P	254
Left Address Number Prefix	AdNumPre_L	C	P	15
Right Address Number Prefix	AdNumPre_R	C	P	15
Left FROM Address	FromAddr_L	M	N	6
Left TO Address	ToAddr_L	M	N	6
Right FROM Address	FromAddr_R	M	N	6
Right TO Address	ToAddr_R	M	N	6
Parity Left	Parity_L	M	P	1
Parity Right	Parity_R	M	P	1
Street Name Pre Modifier	St_PreMod	C	E	15
Street Name Pre Directional	St_PreDir	C	P	9
Street Name Pre Type	St_PreTyp	C	E	50
Street Name Pre Type Separator	St_PreSep	C	E	20
Street Name	St_Name	M	E	60
Street Name Post Type	St_PosTyp	C	E	50
Street Name Post Directional	St_PosDir	C	P	9
Street Name Post Modifier	St_PosMod	C	E	25
Legacy Street Name Pre Directional*	LSt_PreDir	C	P	2
Legacy Street Name*	LSt_Name	C	P	75
Legacy Street Name Type*	LSt_Type	C	P	4
Legacy Street Name Post Directional*	LSt_PosDir	C	P	2
ESN Left*	ESN_L	C	P	5
ESN Right*	ESN_R	C	P	5
MSAG Community Name Left*	MSAGComm_L	C	P	30
MSAG Community Name Right*	MSAGComm_R	C	P	30
Country Left	Country_L	M	P	2
Country Right	Country_R	M	P	2
State Left	State_L	M	P	2

Descriptive Name	Field Name	M/C/O	Type	Field Width
State Right	State_R	M	P	2
County Left	County_L	M	P	40
County Right	County_R	M	P	40
Additional Code Left	AddCode_L	C	P	6
Additional Code Right	AddCode_R	C	P	6
Incorporated Municipality Left	IncMuni_L	M	E	100
Incorporated Municipality Right	IncMuni_R	M	E	100
Unincorporated Community Left	UnincCom_L	O	E	100
Unincorporated Community Right	UnincCom_R	O	E	100
Neighborhood Community Left	NbrhdCom_L	O	E	100
Neighborhood Community Right	NbrhdCom_R	O	E	100
Postal Code Left	PostCode_L	O	P	7
Postal Code Right	PostCode_R	O	P	7
Postal Community Name Left	PostComm_L	O	P	40
Postal Community Name Right	PostComm_R	O	P	40
Road Class	RoadClass	O	P	15
One-Way	OneWay	O	P	2
Speed Limit	SpeedLimit	O	N	3
Validation Left	Valid_L	O	P	1
Validation Right	Valid_R	O	P	1

* Used in legacy systems and is not used in a full NG9-1-1 implementation

Table 3-1 Road Centerlines Data Layer

3.2 Site/Structure Address Points – REQUIRED

Site/Structure Address Points ideally represent the location of a site or structure or the location of access to a site or structure. Site/Structure Address Points can also represent landmarks. While Site/Structure Address Points is a required layer, there is no requirement for the completeness of these data. It is understood that it will take time and resources to fully develop complete and accurate address point data.

Address points have the ability to locate sites that otherwise may not geocode correctly using the road centerline data, areas of unusual addressing (i.e. odd addresses on even side of the road centerlines and vice versa), and other areas where the data is available. Some addressable locations may be problematic near boundaries.

The Address Number, Street Name, and place name attributes (e.g. Incorporated Municipality, Unincorporated Community, Neighborhood Community) in the Site/Structure Address Points layer SHOULD be consistent with the address number range, street name, and left/right place name attribute combinations found in the road centerline layer.

While there may be address data sets available, they may not be in the standardized format of this schema. GIS data providers should be working toward developing and maintaining the site structure point data described in this Standard.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Site NENA Globally Unique ID	Site_NGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	40
Additional Code	AddCode	C	P	6
Additional Data URI	AddDataURI	C	U	254
Incorporated Municipality	Inc_Muni	M	E	100
Unincorporated Community	Uninc_Comm	O	E	100
Neighborhood Community	Nbrhd_Comm	O	E	100
Address Number Prefix	AddNum_Pre	C	P	15
Address Number	Add_Number	C	N	6
Address Number Suffix	AddNum_Suf	C	P	15
Street Name Pre Modifier	St_PreMod	C	E	15
Street Name Pre Directional	St_PreDir	C	P	9
Street Name Pre Type	St_PreTyp	C	E	50
Street Name Pre Type Separator	St_PreSep	C	E	20
Street Name	St_Name	C	E	60
Street Name Post Type	St_PosTyp	C	E	50
Street Name Post Directional	St_PosDir	C	P	9
Street Name Post Modifier	St_PosMod	C	E	25
Legacy Street Name Pre Directional*	LSt_PreDir	C	P	2
Legacy Street Name*	LSt_Name	C	P	75
Legacy Street Name Type*	LSt_Type	C	P	4
Legacy Street Name Post Directional*	LSt_PosDir	C	P	2
ESN*	ESN	C	P	5
MSAG Community Name*	MSAGComm	C	P	30
Postal Community Name	Post_Comm	O	P	40
Postal Code	Post_Code	O	P	7

Descriptive Name	Field Name	M/C/O	Type	Field Width
ZIP Plus 4	Post_Code4	O	P	4
Building	Building	O	P	75
Floor	Floor	O	P	75
Unit	Unit	O	P	75
Room	Room	O	P	75
Seat	Seat	O	P	75
Additional Location Information	Addtl_Loc	O	E	225
Complete Landmark Name	LandmkName	C	E	150
Mile Post	Mile_Post	C	P	150
Place Type	Place_Type	O	P	50
Placement Method	Placement	O	P	25
Longitude	Long	O	F	-
Latitude	Lat	O	F	-
Elevation	Elev	O	N	6

* Used in Legacy Systems and is not used in a full NG9-1-1 implementation

Table 3-2 Site/Structure Address Points Data Layer

3.3 PSAP Boundary[1] – REQUIRED

The primary use for the PSAP Boundary is to route call/emergency requests for NG9-1-1. This layer depicts the polygon(s) and related attribute information that defines the geographic area of all PSAP boundaries within a given 9-1-1 Authority's geographic coverage area. The PSAP Boundary layer may have one or many PSAP Boundaries contained in the layer. Each PSAP Boundary defines the geographic area of a PSAP that has primary responsibilities for an emergency request. This layer is used by the ECRF to perform a geographic query to determine the PSAP to which an emergency request is routed. An emergency request is routed using the NG9-1-1 Core Services based upon the geographic location of the request, provided by either a civic address, geographic coordinate or geodetic shapes as defined in NENA-STA-010 [1].

[1] Within the ECRF, LVF, MCS, GCS (Geocode Service), and MDS (Map Display Service), the PSAP Boundary is an Emergency Service Boundary. It is listed as a separate layer here, although in every respect it is equivalent to an Emergency Service Boundary with urn:nena:service:sos.psap as its Service URN. It should be noted that the Policy Routing Function of an ESRP may override the predefined PSAP route provided by an ECRF based on certain policies established by the PSAP. The boundary that corresponds to the Service URN urn:service:sos depends on the architecture of the ESInet and may or may not be the same as this boundary. How the ECRF determines what boundary it uses for urn:service:sos is beyond the scope of this document.

296

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Emergency Service Boundary NENA Globally Unique ID	ES_NGUID	M	P	254
State	State	M	P	2
Agency ID	Agency_ID	M	P	100
Service URI	ServiceURI	M	U	254
Service URN	ServiceURN	M	P	50
Service Number	ServiceNum	O	P	15
Agency vCard URI	AVcard_URI	M	U	254
Display Name	DsplayName	M	P	60

297 *Table 3-3 PSAP Boundary Data Layer*

298 ## 3.4 Emergency Service Boundary – REQUIRED

299 An Emergency Service Boundary layer defines the geographic area for the primary providers of
300 response services. Each of these layers is used by the ECRF to perform a geographic query to
301 determine which Emergency Service Providers are responsible for providing service to a location in
302 the event a selective transfer is desired, to direct an Emergency Incident Data Document to a
303 secondary PSAP for dispatch, or to display the responsible agencies at the PSAP. In addition,
304 Emergency Service Boundaries are used by PSAPs to identify the appropriate entities/first
305 responders to be dispatched. Each Emergency Service Boundary layer may contain one or more
306 polygon boundaries that define the primary emergency services for that geographic area. There
307 MUST be a separate Emergency Service Boundary layer for each type of service.

308 The set of Emergency Service Boundaries MUST include, at a minimum, the following:

309 • Law Enforcement
310 • Fire
311 • Emergency Medical Services

312 Other Emergency Service Boundaries MAY include, but are not limited to:

313 • Poison Control
314 • Forest Service
315 • Coast Guard
316 • Animal Control

The list above is not comprehensive. Other emergency service providers may have boundaries created for them, based on the unique needs of the 9-1-1 Authority. Emergency Service Boundary information is different from the other layers described in this document since the template below is reused for each emergency service type.

The 9-1-1 Authority MAY maintain the Emergency Service Boundary layer as a combined or single layer for each emergency service. However, when exchanging emergency service boundary information in an NG9-1-1 environment, Emergency Service Boundaries MUST be exchanged as individual layers for each emergency service type (e.g. one for law, one for fire, and one for EMS).

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Emergency Service Boundary NENA Globally Unique ID	ES_NGUID	M	P	254
State	State	M	P	2
Agency ID	Agency_ID	M	P	100
Service URI	ServiceURI	M	U	254
Service URN	ServiceURN	M	P	50
Service Number	ServiceNum	O	P	15
Agency vCard URI	AVcard_URI	M	U	254
Display Name	DsplayName	M	P	60

Table 3-4 Emergency Service Boundary Data Layer

3.5 Provisioning Boundary - REQUIRED

This polygon layer defines the area of GIS data provisioning responsibility, with no unintentional gaps or overlaps. The Provisioning Boundary must be agreed to by all adjoining data provisioning providers. This Provisioning Boundary polygon layer can be used by an ECRF to facilitate exclusion of erroneous features that lie beyond the boundary, for geoprocessing purposes and can also be used by the Forest Guide to determine coverage for a data provisioning authority. It is a mandatory (M) layer with the following schema structure.

When provisioning data for an ECRF and LVF through the SI, a 9-1-1 Authority (or 9-1-1 Authority designee) MUST only include GIS data for their geographic area of responsibility and MUST ensure the data includes coverage for the entire extent of that area.

Note: The 9-1-1 Authority is ultimately responsible for the GIS data within the area they provide service for.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Provisioning Boundary NENA Globally Unique ID	PB_NGUID	M	P	254

Table 3-5 Provisioning Boundary Data Layer

3.6 Street Name Alias Methodology

The street name as assigned by the local addressing authority MUST be the name in the Road Centerlines Table. The street name assigned by the local addressing authority is the street name used for location validation, and call routing. However, many roads are known by more than one street name, and these are known as alias street names. There are many ways to represent an alias. This document describes one model. Regardless of the alias naming methodology selected, one MUST ensure it is compatible with the latest version of Appendix B of NENA-STA-010 [1]. Note that the representation shown in this section is compatible with the latest version of Appendix B of NENA-STA-010 [1].

Alias street names are common and must be considered. Examples include when a state route or state highway crosses into a city jurisdiction, when several streets "merge" to traverse the same road segment, or when honorary names are given to previously named and addressed roads. Many 9-1-1 Authorities will need to accommodate for alias street names during call taking and data sharing.

The method of maintaining alias street names is illustrated below in the Street Name Alias Table, Figure 3-3. The attribute data in Figure 3-1 and Figure 3-3 below is only to illustrate the concept of managing alias street names. In the Road Centerlines example in Figure 3-1, the street names "Avenue of the Pines" and "Main Street" have been assigned by the local addressing authority. Each street name has two different segments associated with it. All of the segments are in Any County, with the two segments associated with Main Street also being in Some City. Each road centerline segment has a NENA Globally Unique ID (Road Centerline NGUID) assigned to it. In this example the Road Centerline NGUID is simply RCL1@AC911.tx.us, RCL2@AC911.tx.us, RCL3@AC911.tx.us, or RCL4@AC911.tx.us.

Road Centerline NGUID	Street Name Pre Modifier	Street Name Pre Directional	Street Name Pre Type	Street Name Pre Type Separator	Street Name	Street Name Post Type	Street Name Post Directional	Street Name Post Modifier	State Left	State Right	County Left	County Right	Incorporated Municipality Left	Incorporated Municipality Right
RCL1@AC911.tx.us			Avenue	of the	Pines				TX	TX	Any County	Any County		
RCL2@AC911.tx.us			Avenue	of the	Pines				TX	TX	Any County	Any County		
RCL3@AC911.tx.us					Main	Street			TX	TX	Any County	Any County	Some City	Some City
RCL4@AC911.tx.us					Main	Street			TX	TX	Any County	Any County	Some City	Some City

Figure 3-1 Street Name Alias Methodology

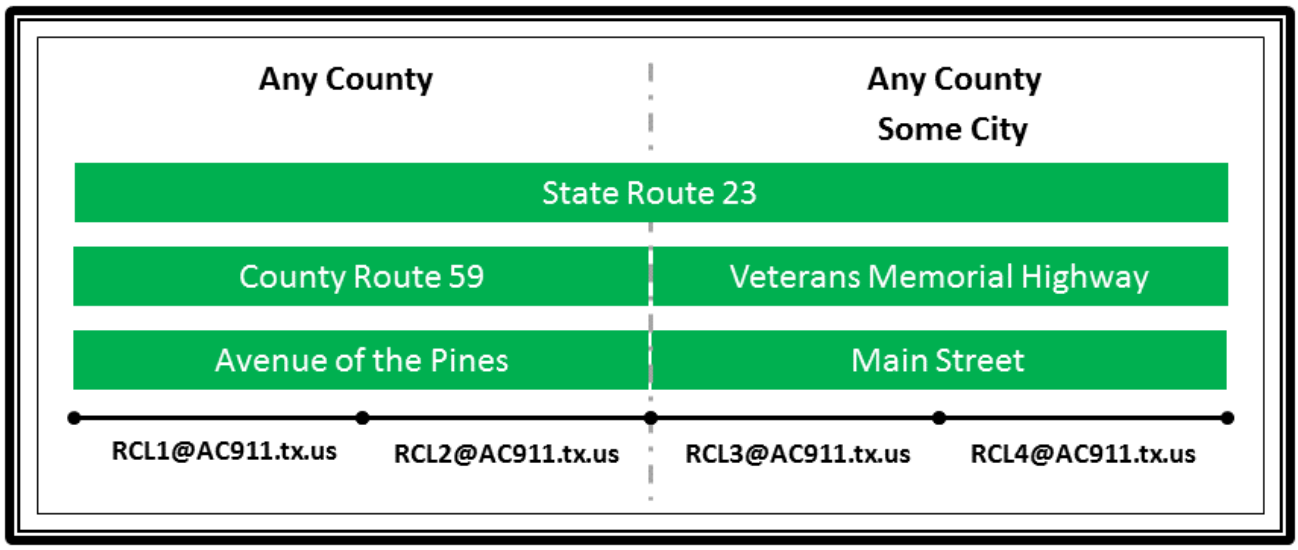

Figure 3-2 Graphic Depiction of Figure 3-1 Street Name Alias Methodology

In Figure 3-2, Avenue of the Pines and Main Street that have been assigned by the local addressing authority each has several alias street names:

- State Route 23, the street name assigned by the state department of transportation, is used as an alias for Avenue of the Pines and Main Street. These four segments have an individual Road Centerline NGUID of RCL1@AC911.tx.us, RCL2@AC911.tx.us, RCL3@AC911.tx.us, or RCL4@AC911.tx.us.
- County Route 59 is an alias for the two segments of Avenue of the Pines that are in Any County but not in Some City. These two segments have an individual Road Centerline NGUID of RCL1@AC911.tx.us and RCL2@AC911.tx.us.
- Veterans Memorial Highway is an alias for the two segments of Main Street that are in Some City. These two segments have an individual Road Centerline NGUID of RCL3@AC911.tx.us and RCL4@AC911.tx.us.

Road Centerline NGUID is used to relate the alias street names in the Street Name Alias Table to the road centerline segments in the Road Centerlines layer in Section 3.1.

To ensure data integrity, the user MUST assign an Alias Street Name NGUID to each record in the Street Name Alias Table. The Alias Street Name NGUID, as with the other respective Unique IDs for each layer, MUST be globally unique and therefore has only one occurrence.

Alias Street Name NGUID	Road Centerline NGUID	Alias Street Name Pre Modifier	Alias Street Name Pre Directional	Alias Street Name Pre Type	Alias Street Name Pre Type Separator	Alias Street Name	Alias Street Name Post Type	Alias Street Name Post Directional	Alias Street Name Post Modifier
AST1@AC911.tx.us	RCL1@AC911.tx.us			State Route		23			
AST2@AC911.tx.us	RCL2@AC911.tx.us			State Route		23			
AST3@AC911.tx.us	RCL3@AC911.tx.us			State Route		23			
AST4@AC911.tx.us	RCL4@AC911.tx.us			State Route		23			
AST5@AC911.tx.us	RCL1@AC911.tx.us			County Route		59			
AST6@AC911.tx.us	RCL2@AC911.tx.us			County Route		59			
AST7@AC911.tx.us	RCL3@AC911.tx.us					Veterans Memorial	Highway		
AST8@AC911.tx.us	RCL4@AC911.tx.us					Veterans Memorial	Highway		

Figure 3-3 Street Name Alias Table

From the Street Name Alias Table in Figure 3-3 above, we can tell that:

- Road Centerline NGUID = RCL1@AC911.tx.us has an alias of State Route 23 and another alias of County Route 59
- Road Centerline NGUID = RCL2@AC911.tx.us has an alias of State Route 23 and another alias of County Route 59
- Road Centerline NGUID = RCL3@AC911.tx.us has an alias of State Route 23 and another alias of Veterans Memorial Highway
- Road Centerline NGUID = RCL4@AC911.tx.us has an alias of State Route 23 and another alias of Veterans Memorial Highway

By using the Road Centerline NGUID as the attribute that ties together, or relates, the Road Centerlines with the Street Name Alias Table, one can add as many alias street names as needed.

3.6.1 Street Name Alias Table – Strongly Recommended

The Street Name Alias Table contains alternate street names that are associated with the legal street name contained in the Road Centerline layer.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Alias Street Name NENA Globally Unique ID	ASt_NGUID	M	P	254
Road Centerline NENA Globally Unique ID	RCL_NGUID	M	P	254
Alias Street Name Pre Modifier	ASt_PreMod	C	E	15
Alias Street Name Pre Directional	ASt_PreDir	C	P	9
Alias Street Name Pre Type	ASt_PreTyp	C	E	50
Alias Street Name Pre Type Separator	ASt_PreSep	C	E	20
Alias Street Name	ASt_Name	M	E	60
Alias Street Name Post Type	ASt_PosTyp	C	E	50
Alias Street Name Post Directional	ASt_PosDir	C	P	9
Alias Street Name Post Modifier	ASt_PosMod	C	E	25
Alias Legacy Street Name Pre Directional*	ALStPreDir	C	P	2
Alias Legacy Street Name*	ALStName	C	P	75
Alias Legacy Street Name Type*	ALStTyp	C	P	4
Alias Legacy Street Name Post Directional*	ALStPosDir	C	P	2

* Used in Legacy Systems and is not used in a full NG9-1-1 implementation

Table 3-6 Street Name Alias Table

3.7 Landmark Name Part Methodology

Note: Landmark Name Parts can quickly become complex. This section will be revisited in both the NENA CLDXF Standard (NENA-STA-004) [2] document and a future version of this document. The Landmark Name Part Methodology is likely to change.

The Complete Landmark Name in the Site/Structure Address Points layer is the complete name by which a prominent feature is publicly known. The NENA CLDXF Standard (NENA-STA-004) [2] further explains that a Complete Landmark Name is composed of one or more Landmark Name Parts. To be compatible with the NENA CLDXF Standard (NENA-STA-004) [2] and Appendix B in NENA-STA-010 [1], the NG9-1-1 GIS Data Model MUST include the Landmark Name Part element. There are different ways to represent Landmark Name Part elements in a GIS data model. This document describes one model. Regardless of the Landmark Name Part Methodology used,

one MUST ensure it is convertible via software, with no extra information, to the latest version of Appendix B in NENA-STA-010 [1].

Figure 3-4 below shows the Complete Landmark Names for two address points in the Site/Structure Address Points layer. "James A Haley Veterans Hospital" is the Complete Landmark Name for the Address Point with the Site NENA Globally Unique ID "SITE72@911Authority_domain.fl.us" and "University of South Florida Sun Dome" is the Complete Landmark Name for the Address Point with "SITE75@911Authority_domain.fl.us" as its Site NENA Globally Unique ID.

Site NENA Globally Unique ID (Site_NGUID)	Complete Landmark Name
SITE72@911Authority_domain.fl.us	James A Haley Veterans Hospital
SITE75@911Authority_domain.fl.us	University of South Florida Sun Dome

Figure 3-4 Example of Complete Landmark Names with their unique IDs in the Site/Structure Address Points layer

A Landmark Name Part is the name or a collection of names by which a prominent feature is publicly known. Often, a landmark can be located within another larger landmark and the name of the larger landmark is included as part of the name of the smaller landmark. In such a situation of nested landmarks where a landmark is denoted by multiple names in a series, each name is a separate Landmark Name Part and the Complete Landmark Name is created by concatenating the Landmark Name Parts. For example, "University of South Florida" and "Sun Dome" (an arena on the University of South Florida's campus) would each be a Landmark Name Part and the associated Complete Landmark Name would be "University of South Florida Sun Dome". The order in which to concatenate the parts is determined by a Landmark Name Part Order number where 1 is the first (or leftmost) Landmark Name Part, 2 is the second Landmark Name Part, etc. The Complete Landmark Name in the Site/Structure Address Points layer is conditional because a Landmark Name is NOT REQUIRED but a Landmark Name Part is REQUIRED in order to have a Complete Landmark Name.

A landmark may sometimes only have one Landmark Name Part. In such a situation, the Landmark Name Part and its associated Complete Landmark Name would be exactly the same and have a Landmark Name Part Order of 1. For example, the landmark "James A Haley Veterans Hospital" would have a Complete Landmark Name of "James A Haley Veterans Hospital" in the Site/Structure Address Points layer and a single Landmark Name Part of "James A Haley Veterans Hospital" in the Landmark Name Part Table with a Landmark Name Part Order of "1."

The Landmark Name Part Table contains all Landmark Name Parts for each Complete Landmark Name in the Site/Structure Address Points in Section 3.2. The Landmark Name Part Table also contains all Landmark Name Parts for each Alias Complete Landmark Name in the Complete Landmark Name Alias Table in Section 3.8.1. Each record in the Landmark Name Part Table MUST have its own Landmark Name Part NGUID. The Landmark Name Part NGUID, as with the other respective Unique IDs for each layer, MUST be globally unique.

The Site NGUID is used to relate the Landmark Name Parts for each Complete Landmark Name in the Site/Structure Address Points. The Alias Complete Landmark Name NGUID is used to relate the Landmark Name Parts for each Alias Complete Landmark Name in the Complete Landmark Name Alias Table. In the Landmark Name Part methodology described in this document, each Landmark Name Part record will have either the Site NGUID populated or the Alias Complete Landmark Name NGUID populated, but not both.

The method of maintaining Landmark Name Parts is illustrated below in Figure 3-5.

Landmark Name Part NENA Globally Unique ID (LMNP_NGUID)	Site NENA Globally Unique ID (Site_NGUID)	Alias Complete Landmark Name NENA Globally Unique ID (ACLMNNGUID)	Landmark Name Part	Landmark Name Part Order
LMNP300@911Authority_domain.fl.us	SITE72@911Authority_domain.fl.us		James A Haley Veterans Hospital	1
LMNP301@911Authority_domain.fl.us		CLMN27@911Authority_domain.fl.us	Veterans Hospital	1
LMNP302@911Authority_domain.fl.us		CLMN28@911Authority_domain.fl.us	Haley Veterans	1
LMNP303@911Authority_domain.fl.us		CLMN29@911Authority_domain.fl.us	VA Hospital	1
LMNP411@911Authority_domain.fl.us	SITE75@911Authority_domain.fl.us		University of South Florida	1
LMNP412@911Authority_domain.fl.us	SITE75@911Authority_domain.fl.us		Sun Dome	2
LMNP413@911Authority_domain.fl.us		CLMN42@911Authority_domain.fl.us	USF	1
LMNP414@911Authority_domain.fl.us		CLMN42@911Authority_domain.fl.us	Sun Dome	2
LMNP415@911Authority_domain.fl.us		CLMN43@911Authority_domain.fl.us	Sun Dome	1

Figure 3-5 Example of a Landmark Name Part Table for Figure 3-4 and Figure 3-9

Figure 3-5 contains the Landmark Name Parts for the Site/Structure Address Point in Figure 3-4 with the Complete Landmark Name of "James A Haley Veterans Hospital" as follows:

- "SITE72@911Authority_domain.fl.us" is the Site_NGUID that relates Landmark Name Part "James A Haley Veterans Hospital" to the Site/Structure Address Point.
- "CLMN27@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "Veterans Hospital" to its associated Alias Complete Landmark Name in Figure 3-9.

- "CLMN28@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "Haley Veterans Hospital" to its associated Alias Complete Landmark Name in Figure 3-9.
- "CLMN29@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "VA Hospital" to its associated Alias Complete Landmark Name in Figure 3-9.
- Since each Landmark Name Part is the same as its associated Complete Landmark Name or Alias Complete Landmark Name, the Landmark Name Part Order for each is "1."

Figure 3-5 also contains the Landmark Name Parts for the Site/Structure Address Point in Figure 3-4 with the Complete Landmark Name of "University of South Florida Sun Dome" as follows:

- "SITE75@911Authority_domain.fl.us" is the Site_NGUID that relates Landmark Name Part "University of South Florida" to the Site/Structure Address Point and is assigned a Landmark Name Part Order of "1" since it is the first (or leftmost) Landmark Name Part of the Complete Landmark Name "University of South Florida Sun Dome."
- SITE75@911Authority_domain.fl.us" is the Site_NGUID that relates Landmark Name Part "Sun Dome" to the Address Point and is assigned a Landmark Name Part Order of "2" since it is the second Landmark Name Part of the Complete Landmark Name "University of South Florida Sun Dome."

The address point in Figure 3-4 with the Complete Landmark Name of "University of South Florida Sun Dome" also has two Alias Complete Landmark Names, shown in Figure 3-9 as "USF Sun Dome" and "Sun Dome." The Landmark Name Parts for these two Alias Complete Landmark Names are contained in Figure 3-5 as follows:

- "CLMN42@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "USF" to its associated Alias Complete Landmark Name "USF Sun Dome" and is assigned a Landmark Name Part Order of "1" since it is the first (or leftmost) Landmark Name Part of "USF Sun Dome."
- "CLMN42@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "Sun Dome" to its associated Alias Complete Landmark Name "USF Sun Dome" and is assigned a Landmark Name Part Order of "2" since it is the second Landmark Name Part of "USF Sun Dome."
- "CLMN43@911Authority_domain.fl.us" is the ACLMNNGUID that relates Landmark Name Part "Sun Dome" to its associated Alias Complete Landmark Name "Sun Dome" and is assigned a Landmark Name Part Order of "1" since it is exactly the same as its associated Alias Complete Landmark Name.

3.7.1 Landmark Name Part Table – Strongly Recommended

The Landmark Name Part Table contains the name or collection of names by which a prominent feature is publicly known. When a landmark is denoted by multiple names in a series, the Landmark Name Part element holds the separate individual names and specifies the order in which the separate Landmark Name Part names SHOULD be combined into a Complete Landmark Name.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Landmark Name Part NENA Globally Unique ID	LMNP_NGUID	C	P	254
Site NENA Globally Unique ID	Site_NGUID	C	P	254
Alias Complete Landmark Name NENA Globally Unique ID	ACLMNNGUID	C	P	254
Landmark Name Part	LMNamePart	M	E	150
Landmark Name Part Order	LMNP_Order	M	N	1

Table 3-7 Landmark Name Part Table

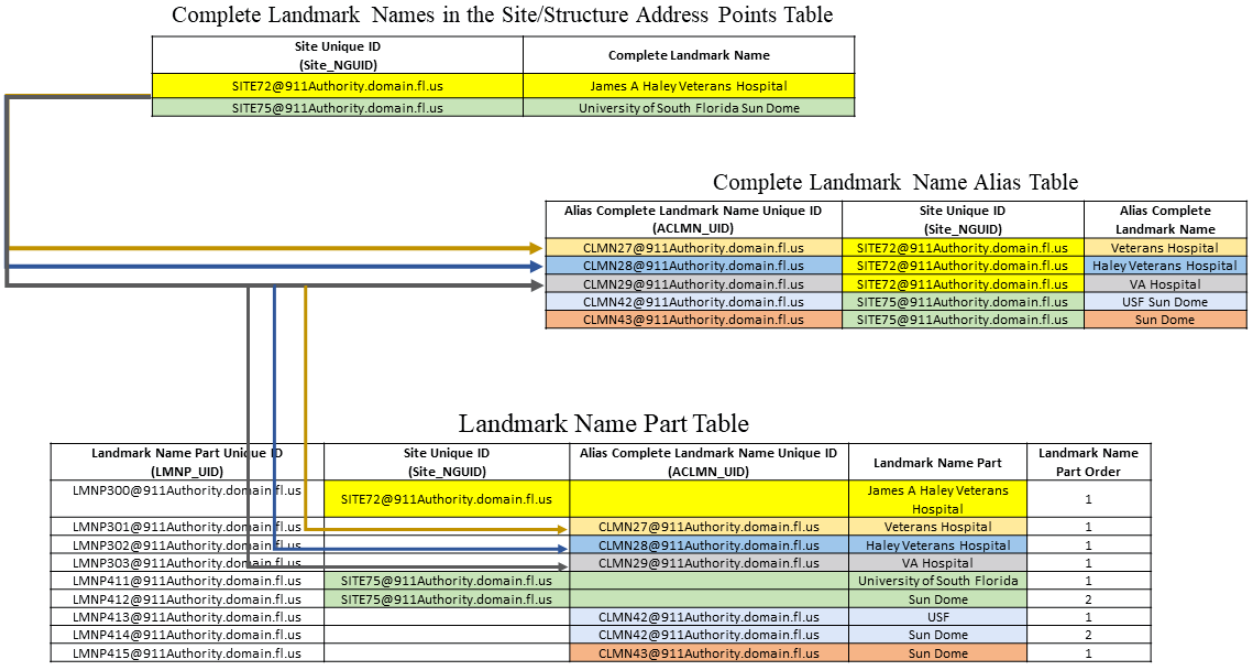

Figure 3-6 Relationship between Site/Structure Address Points, Complete Landmark Name Part, and Complete Landmark Alias

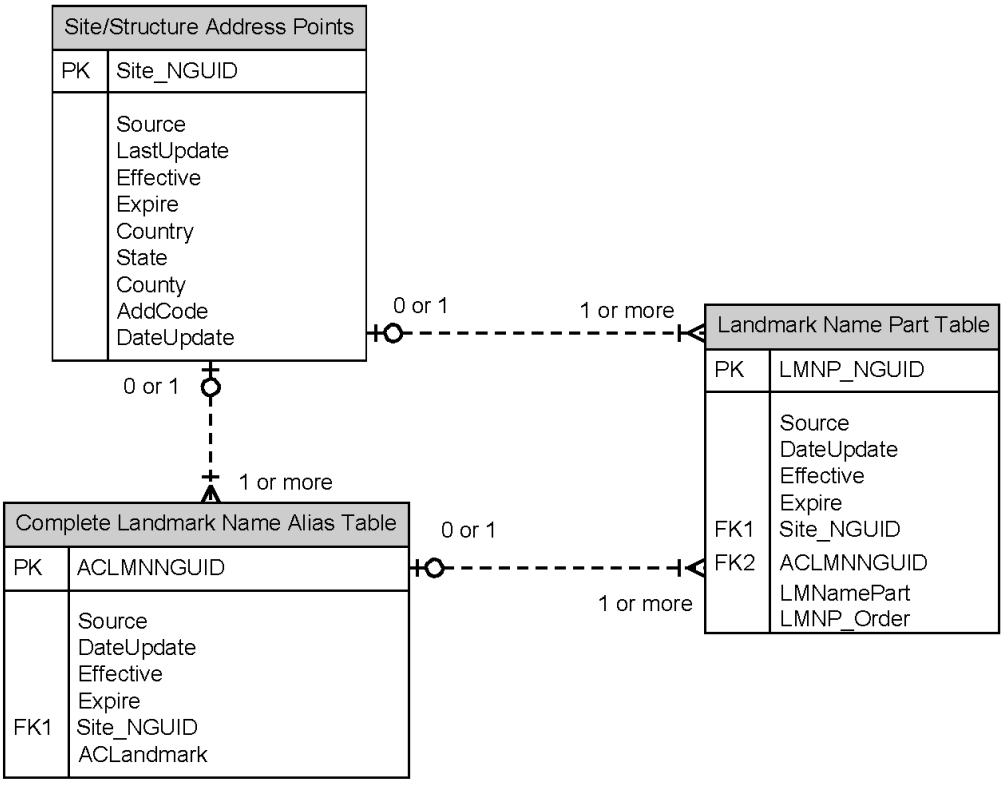

Figure 3-7 Graphical Relationship between the Site/Structure Address Points Layer, Landmark Name Part Table, and Complete Landmark Name Alias Table

3.8 Complete Landmark Name Alias Methodology

The Complete Landmark Name Alias Table contains alias or "also known as" landmark names that are associated with the Complete Landmark Name in the Site/Structure Address Points layer. For example, "James A Haley Veterans Hospital" may commonly be known as "Veterans Hospital," "Haley Veterans Hospital" or "VA Hospital."

The Complete Landmark Name Alias Table allows for one address to have multiple Complete Landmark Names without having to create an address point for each different Complete Landmark Name. Figure 3-8 below shows the Complete Landmark Names for two address points in the Site/Structure Address Points layer. "James A Haley Veterans Hospital" is the Complete Landmark Name for the Address Point with the Site NGUID "SITE72@911Authority_domain.fl.us" and "University of South Florida Sun Dome" is the Complete Landmark Name for the Address Point with SITE75@911Authority_domain.fl.us as its Site NGUID.

Site NENA Globally Unique ID (Site_NGUID)	Complete Landmark Name
SITE72@911Authority_domain.fl.us	James A Haley Veterans Hospital
SITE75@911Authority_domain.fl.us	University of South Florida Sun Dome

Figure 3-8 Example of Complete Landmark Names with their NGUIDs in the Site/Structure Address Points Layer

The method of maintaining Alias Complete Landmark Names is illustrated below in Figure 3-9. "Veterans Hospital," "Haley Veterans Hospital" and "VA Hospital" are three alias names for the "James A Haley Veterans Hospital" and would be contained in the Complete Landmark Name Alias Table shown in Figure 3-9 below.

Alias Complete Landmark Name NENA Globally Unique ID (ACLMNNGUID)	Site NENA Globally Unique ID (Site_NGUID)	Alias Complete Landmark Name
CLMN27@911Authority_domain.fl.us	SITE72@911Authority_domain.fl.us	Veterans Hospital
CLMN28@911Authority_domain.fl.us	SITE72@911Authority_domain.fl.us	Haley Veterans Hospital
CLMN29@911Authority_domain.fl.us	SITE72@911Authority_domain.fl.us	VA Hospital
CLMN42@911Authority_domain.fl.us	SITE75@911Authority_domain.fl.us	USF Sun Dome
CLMN43@911Authority_domain.fl.us	SITE75@911Authority_domain.fl.us	Sun Dome

Figure 3-9 Example of a Complete Landmark Name Alias Table

Each record in the Complete Landmark Name Alias Table MUST have its own Alias Complete Landmark Name NGUID. The Alias Complete Landmark Name NGUID, as with the other respective Unique IDs for each layer, MUST be globally unique. The Site NGUID is used to relate the alias landmark names in the Complete Landmark Name Alias Table to the Site/Structure Address Points.

In Figure 3-8, "SITE72@911Authority_domain.fl.us" is the Site NGUID that ties together, or relates, the first three Alias Complete Landmark Names to the Site/Structure Address Point in Figure 3-9 that has a Complete Landmark Name of "James A Haley Veterans Hospital." "SITE75@911Authority_domain.fl.us" is the Site NGUID that ties together, or relates, the fourth and fifth Alias Complete Landmark Names to the Site/Structure Address Point in Figure 3-9 that has a Complete Landmark Name of "University of South Florida Sun Dome."

3.8.1 Complete Landmark Name Alias Table – Strongly Recommended

The Complete Landmark Name Alias Table contains the alternate landmark names that are associated with the Complete Landmark Name in the Site/Structure Address Points layer.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Alias Complete Landmark Name Globally Unique ID	ACLMNNGUID	M	P	254
Site NENA Globally Unique ID	Site_NGUID	M	P	254
Alias Complete Landmark Name	ACLandmark	C	E	150

Table 3-8 Complete Landmark Name Alias Table

3.9 States or Equivalents – Strongly Recommended

A state, or its equivalent, is a primary governmental division of the United States. Within Canada, the equivalents are the provinces and territories.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
State NENA Globally Unique ID	StateNGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2

Table 3-9 States or Equivalents Data Layer

3.10 Counties or Equivalents – Strongly Recommended

A county or its equivalent boundary is the primary legal division of a state, province, or territory.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
County NENA Globally Unique ID	CntyNGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	75

Table 3-10 Counties or Equivalents Data Layer

3.11 Incorporated Municipality Boundary – Strongly Recommended

This is defined as the boundary of a city, town, village, borough, or similar entity that has local governmental powers and may be useful in determining jurisdictional authority for addressing and emergency response.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Incorporated Municipality NENA Globally Unique ID	IncM_NGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	75
Additional Code	AddCode	C	P	6
Incorporated Municipality	Inc_Muni	M	E	100

Table 3-11 Incorporated Municipality Boundary Data Layer

3.12 Unincorporated Community Boundary – Strongly Recommended

This is defined as the boundary of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, or both, and may be useful in determining jurisdictional authority for addressing and emergency response.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Unincorporated NENA Globally Unique ID	UnincNGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	75
Additional Code	AddCode	C	P	6
Unincorporated Community	Uninc_Comm	M	E	100

Table 3-12 Unincorporated Community Boundary Data Layer

3.13 Neighborhood Community Boundary – Strongly Recommended

This is defined as the boundary of a neighborhood, subdivision, or commercial area. The most intuitive way to refer to a place is often by the neighborhood name. Locations of similar sounding street names may be resolved when the neighborhood name is known. This layer is often beneficial to telecommunicators.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Effective Date	Effective	O	D	-
Expiration Date	Expire	O	D	-
Neighborhood NENA Globally Unique ID	NbrhdNGUID	M	P	254
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	75
Additional Code	AddCode	C	P	6
Incorporated Municipality	Inc_Muni	M	E	100
Unincorporated Community	Uninc_Comm	C	E	100
Neighborhood Community	Nbrhd_Comm	M	E	100

Table 3-13 Neighborhood Community Boundary Data Layer

The following GIS Data layers will not be provisioned into the LVF or the ECRF, but are useful for PSAP map display and 9-1-1 call taking.

3.14 Railroad Centerlines – Recommended

Railroad centerlines represent the estimated centerline of a real-world rail line. A schema crosswalk between this model and the Federal Railroad Administration's Rail Lines data is in Appendix A of this document.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Rail Segment NENA Globally Unique ID	RS_NGUID	M	P	254
Rail Line Owner	RLOWN	C	P	100
Rail Line Operator	RLOP	C	P	100
Rail Line Name	RLNAME	O	P	100
Rail Mile Post Low	RMPL	O	F	-
Rail Mile Post High	RMPH	O	F	-

Table 3-14 Railroad Centerlines Data Layer

3.15 Hydrology Line – Recommended

Features in Hydrology Line are the representation of creeks, streams, and rivers. A schema crosswalk between this model and the United States Geological Survey's National Hydrography Dataset (NHD) data is in Appendix B of this document.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Hydrology Segment NENA Globally Unique ID	HS_NGUID	M	P	254
Hydrology Segment Type	HS_Type	O	P	100
Hydrology Segment Name	HS_Name	O	P	100

Table 3-15 Hydrology Line Data Layer

3.16 Hydrology Polygon – Recommended

Features in Hydrology Polygon are the representation of areal water body features. A schema crosswalk between this model and the United States Geological Survey's National Hydrography Dataset (NHD) data is in Appendix B of this document.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Hydrology Polygon NENA Globally Unique ID	HP_NGUID	M	P	254
Hydrology Polygon Type	HP_Type	O	P	100
Hydrology Polygon Name	HP_Name	O	P	100

Table 3-16 Hydrology Polygon Data Layer

3.17 Cell Sector Location – Recommended

The location information received with a Phase 1 response for a call comes from the wireless routing spreadsheet agreed to between the 9-1-1 Authority and the wireless operator. That information may not be representative of the location of the caller. In some circumstances, PSAPs are able to obtain an approximation of the coverage area of a cell sector from the carrier. This layer is used, when the data is available, to indicate to the telecommunicator the approximate area where the caller may be located. Since the only Phase 1 information received with the call comes from the wireless routing spreadsheet, that location must be unique enough to find the right record in this layer.

The location of the cell sector may provide a gross level of information to the telecommunicator. If provided by the Map Database Service to an out of area PSAP, this capability is even more important when receiving a Phase 1 wireless call.

For more information, see NENA Wireless Call Routing & Testing Validation Standard 57-002 [11] below, https://www.nena.org/?page=WirelessRoutingTest.

In NG9-1-1, wireless operators will introduce the concept of an "Associated Location" which is an address or point agreed to between the wireless operator and the 9-1-1 Authorities associated with each cell sector. The Associated Location is chosen so that calls from that sector will route to the appropriate PSAP.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Country	Country	M	P	2
State	State	M	P	2
County	County	M	P	75
Cell NENA Globally Unique ID	Cell_NGUID	M	P	254
Site ID	Site_ID	C	P	10
Sector ID	Sector_ID	M	P	4
Switch ID	Switch_ID	C	P	10
Market ID	CMarket_ID	C	P	10
Cell Site ID	CSite_Name	C	P	10
ESRD or First ESRK	ESRD_ESRK	C	N	10
Last ESRK	ESRK_Last	C	N	10
Sector Orientation	CSctr_Ornt	M	P	4
Technology	Technology	M	P	10
Site NENA Globally Unique ID	Site_NGUID	O	P	254
Longitude	Long	C	F	-
Latitude	Lat	C	F	-

Table 3-17 Cell Site Location Data Layer

3.18 Mile Marker Location – Recommended

A mile marker location is a numeric measurement from a given beginning point, which may or may not be an actual mile post. Mile post numbers are useful for specifying locations along interstate highways, recreational trails, navigable waterways and other unaddressed routes, as well as stretches of county, state, federal, and other routes where distance measurements are posted. Mile post numbers MAY be used in place of, or in addition to, Address Numbers.

Descriptive Name	Field Name	M/C/O	Type	Field Width
Discrepancy Agency ID	DiscrpAgID	M	P	75
Date Updated	DateUpdate	M	D	-
Mile Post NENA Globally Unique ID	MileMNGUID	M	P	254
Mile Post Unit of Measurement	MileM_Unit	C	P	15
Mile Post Measurement Value	MileMValue	M	F	-
Mile Post Route Name	MileM_Rte	M	P	100
Mile Post Type	MileM_Type	C	P	15
Mile Post Indicator	MileM_Ind	M	P	1

Table 3-18 Mile Marker Location Data Layer

4 Detailed Description of Field Names and Associated Attribute Data

Each Field Name given in the tables in Section 3, GIS Data Model Layers, are listed in alphabetical order below. Each Field Name has a description, attribute data domain, and an example. An attribute data domain defines the set of all valid values that are allowed in the attribute data field. If the domain is none, then any value that matches the data type and description MAY be used for the attribute field. Those with a given data domain MUST use only those values with the domain given. Web links in the examples are for illustrative purposes.

4.1 Additional Code

Description: A code that specifies a geographic area. Used in Canada to hold a Standard Geographical Classification code; it differentiates two municipalities with the same name in a province that does not have counties.
Domain: Statistics Canada, Standard Geographical Classification 2011, Volume I, Statistical Area Classification by Province and Territory – Variant of SGC 2011 http://www.statcan.gc.ca/subjects-sujets/standard-norme/sgc-cgt/2011/index-indexe-eng.htm
Example: 3318013; 55091

4.2 Additional Code Left

Description: The Additional Code on the Left side of the road segment relative to the FROM Node.
Domain: See Additional Code
Example: See Additional Code

4.3 Additional Code Right

Description: The Additional Code on the Right side of the road segment relative to the FROM Node.
Domain: See Additional Code
Example: See Additional Code

4.4 Additional Data URI

Description: URI(s) for additional data associated with the site/structure address point. This attribute is contained in the Site/Structure Address Points layer and will define the Service URI of additional information about a location, including building information (blueprints, contact info, floor plans, etc.).
Domain: List of one or more URIs
Example: https://addl68603.example.com

4.5 Additional Location Information

Description: A part of a sub-address that is not a Building, Floor, Unit, Room, or Seat.
Domain: None
Example: Pediatric Wing; Loading Dock; Concourse B; Gate B27; Corridor 5

4.6 Address Number

Description: The numeric identifier of a location along a thoroughfare or within a defined community.
Domain: Whole numbers from 0 to 999999
Example: "1600" in "1600 Pennsylvania Avenue"
Note: The Address Number MUST be a whole number. This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.7 Address Number Prefix

Description: An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area.
Domain: None
Example: "75-" in "75-6214 Kailua Place"; "3W2N-" in "3W2N-4551"
Note: The Address Number Prefix contains any alphanumeric characters, punctuation, and spaces preceding the Address Number. This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.8 Address Number Suffix

Description: An extension of the Address number that follows it and further identifies a location along a thoroughfare or within a defined area.
Domain: None
Example: "B" in "223B Jay Avenue" or "1/2" in 119 1/2 Elm Street"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.9 Agency ID

Description: A Domain Name System (DNS) domain name which is used to uniquely identify an agency. An agency is represented by a domain name as defined in RFC 1034. Each agency MUST use one domain name consistently in order to correlate actions across a wide range of calls and incidents. Any domain name in the public DNS is acceptable so long as each distinct agency uses a different domain name. This ensures that each agency ID is globally unique.
Domain: MUST be a registered DNS domain name.
Example: psap.harriscounty.tx.us; police.allegheny.pa.us
Note: The Agency ID is a field in the PSAP Boundary and an Emergency Service Boundary which identifies the agency the boundary defines. It is also used in the Emergency Incident Data Document, the Service/Agency Locator, and may be used in constructing NGUIDs.

4.10 Agency vCard URI

Description: A vCard is a file format standard for electronic business cards. The Agency vCard URI is the internet address of an eXtensible Markup Language (XML) data structure which contains contact information (Name of Agency, Contact phone numbers, etc.) in the form of a vCard (RFC 6350). vCard files may be exported from most email programs or created with a text editor. The vCard URI is used in the service boundary layers to provide contact information for that agency. The Agency Locator (see STA-010) will provide these URIs for Agencies listed in it.
Domain: None
Example: https://vcard.psap.allegheny.pa.us; https://vcard.houstontx.gov/fire

4.11 Alias Complete Landmark Name

Description: An alias or alternate name by which a prominent site/structure is publicly known.
Domain: None
Example: JFK Library; SUNY Buffalo; Veterans Hospital; VA Hospital; USF Sun Dome; Sun Dome
Note: Landmarks may or may not be associated with a civic address.

4.12 Alias Complete Landmark Name NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Alias Complete Landmark Name. Each record in the Complete Landmark Name Alias Table MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 27 in the Complete Landmark Name Alias Table would be represented as CLMN27@911Authority_domain.state.us

4.13 Alias Legacy Street Name

Description: The official name of the street as it appears in the Master Street Address Guide
Domain: None
Example: "Main" in "Main St"; "Broadway" in "N Broadway Blvd"

4.14 Alias Legacy Street Name Post Directional

Description: An abbreviation following the Alias Legacy Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located
Domain: N, S, E, W, NE, NW, SE, SW
Example: "W" in "Main St W"

4.15 Alias Legacy Street Name Pre Directional

Description: An abbreviation preceding the Alias Legacy Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located
Domain: N, S, E, W, NE, NW, SE, SW
Example: "N" in "N Foley St"

4.16 Alias Legacy Street Name Type

Description: An abbreviation that follows the Alias Legacy Street Name element and identifies a type of thoroughfare in a complete alias legacy street name. The United States Postal abbreviation for the street type.
Domain: US Postal Service Publication Number 28, Appendix C1
Example: "St" for "Street"; "Pkwy" for "Parkway"; "Ave" for "Avenue"

4.17 Alias Street Name

Description: An alias street name associated with the road centerline segment in the Road Centerline layer. The alias street name does not include any street types, directionals, or modifiers. If an alias street name is used in the Street Name Alias Table this field MUST be populated.
Domain: None
Example: **"**Scenic" in the Alias Street Name "Scenic Boulevard"

4.18 Alias Street Name NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Alias Street Name. Each record in the Street Name Alias Table MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 8173 in the Street Name Alias Table would be represented as AST8173@911Authority_domain.state.us

4.19 Alias Street Name Post Directional

Description: A word following the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located
Domain: North, South, East, West, Northeast, Northwest, Southeast, Southwest
Example: "West" in the Alias Street Name "Foley Street West"

4.20 Alias Street Name Post Modifier

Description: A word or phrase that follows and modifies the Alias Street Name element, but is separated from it by an Alias Street Name Post Type or an Alias Street Name Post Directional or both.
Domain: None
Example: **"**Bypass" in the Alias Street Name "Loop 601 North Bypass"

4.21 Alias Street Name Post Type

Description: A word or phrase that follows the Alias Street Name element and identifies a type of thoroughfare in a complete alias street name.
Domain: Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof.
http://technet.nena.org/nrs/registry/StreetNamePreTypesAndStreetNamePostTypes.xml
Example: "Avenue" in the Alias Street Name "Fashion Avenue"

4.22 Alias Street Name Pre Directional

Description: A word preceding the Alias Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.
Domain: North, South, East, West, Northeast, Northwest, Southeast, Southwest
Example: "North" in the Alias Street Name "North Commerce Street"

4.23 Alias Street Name Pre Modifier

Description: A word or phrase that precedes and modifies the Alias Street Name element but is separated from it by an Alias Street Name Pre Type or an Alias Street Name Pre Directional or both.
Domain: None
Example: "Alternate" in the Alias Street Name "Alternate Route 8"

4.24 Alias Street Name Pre Type

Description: A word or phrase that precedes the Alias Street Name element and identifies a type of thoroughfare in a complete street name.
Domain: Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof.
http://technet.nena.org/nrs/registry/StreetNamePreTypesAndStreetNamePostTypes.xml
Example: "Avenue" in the Alias Street Name "Avenue C"
"County Road" in the Alias Street Name "County Road 12"
"Avenue" in the Alias Street Name "Avenue of the Americas"

4.25 Alias Street Name Pre Type Separator

Description: A preposition or prepositional phrase between the Alias Street Name Pre Type and the Alias Street Name. This element is defined in CLDXF (NENA-STA-004) [2] as a US specific extension of PIDF-LO per RFC 6848 [5].
Domain: Restricted to values found in the "NENA Registry of Street Name Pre Type Separators."
http://technet.nena.org/nrs/registry/StreetNamePreTypeSeparators.xml
Example: "in the" in the Alias Street Name "Circle in the Woods"

4.26 Building

Description: One among a group of buildings that have the same address number and complete street name.
Domain: None
Example: Building A; Building 4

4.27 Cell Site ID

Description: Name provided by the wireless service provider on the wireless routing sheet, usually unique to the cell site.
Domain: None
Example: 234-1; HX0441-4412

4.28 Cell NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Cell Site Location. Each record in the Cell Site Location layer MUST have a globally unique ID. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 1127 in the Cell Site Location layer would be represented as CELL1127@911Authority_domain.state.us

4.29 Complete Landmark Name

Description: The name by which a prominent site/structure is publicly known.
Domain: None
Example: Empire State Building; The Alamo; South Central High School; Kirkwood Mall; James A Haley Veterans Hospital; University of South Florida Sun Dome
Note: Landmarks may or may not be associated with a civic address. There are two landmark name elements: Landmark Name Part and Complete Landmark Name. Within a record, Landmark Name Part MAY occur multiple times, while Complete Landmark Name MAY occur only once. When a landmark is denoted by multiple names in a series (such as "University of South Florida" and "Sun Dome," an arena on the university campus), the Landmark Name Part element holds the separate individual names, and the Complete Landmark Name holds the complete combination. The Landmark Name Part element also allows specification of the order in which the separate names SHOULD be combined into the complete name. This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.30 Country

Description: The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
Domain: Restricted to the two-letter designations provided in ISO 3166-1.
Example: "US" for the United States of America; "CA" for Canada

4.31 Country Left

Description: The name of the Country on the Left side of the road segment relative to the FROM Node, represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
Domain: Restricted to the two-letter designations provided in ISO 3166-1.
Example: "US" for the United States of America; "CA" for Canada

4.32 Country Right

Description: The name of the Country on the Right side of the road segment relative to the FROM Node, represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
Domain: Restricted to the two-letter designations provided in ISO 3166-1.
Example: "US" for the United States of America; "MX" for Mexico

4.33 County

Description: The name of a County or County-equivalent where the address is located. A county (or its equivalent) is the primary legal division of a state or territory.
Domain: Restricted to the names of counties and county equivalents. For the US, a complete list is maintained by the US Census Bureau as ANSI INCITS 31:2009 [12] (Formerly FIPS 6-4) and the Domain is restricted to the exact listed values as published in ANSI INCITS 31:2009 [12], including casing and use of abbreviations.
Example: Washington County; Kenai Peninsula Borough; Jefferson Parish; Carson City; Falls Church city; District of Columbia
Note: The following clarifications are provided directly from the NENA CLDXF Standard (NENA-STA-004) [2]:

- County equivalents include parishes (LA), boroughs and census areas (AK), federal district (DC), independent cities (VA, MD, MO, NV), municipios (PR), and districts (AS, GU, MP,VI).
- The county name or county equivalent name indicates location, not jurisdiction. Many counties include federal, state, tribal, and other lands within which county government powers, including powers to name roads and assign address numbers, may be limited or superseded by other government bodies. Indicating who has what jurisdiction at a given address is well beyond the scope or intent of this standard.
- FIPS Codes have been superseded, renamed, and updated by the InterNational Committee for Information Technology Standards (INCITS) and can be found at: www.census.gov/geo/reference/codes/cou.html.

4.34 County Left

Description: The name of a County or County-equivalent on the Left side of the road segment relative to the FROM Node. A county (or its equivalent) is the primary legal division of a state or territory.
Domain: See County
Example: St. Louis County; Adams County

4.35 County Right

Description: The name of a County or County-equivalent on the Right side of the road segment relative to the FROM Node. A county (or its equivalent) is the primary legal division of a state or territory.
Domain: See County
Example: St. Johns County; DeSoto County; Doña Ana County

4.36 County NENA Globally Unique ID

Description: The NENA Globally Unique ID for each County (or its equivalent) Boundary. Each record in the Counties or Equivalents layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 23 in the Counties or Equivalents layer would be represented as CNTY23@911Authority_domain.state.us

4.37 Date Updated

Description: The date and time that the record was created or last modified. This value MUST be populated upon modifications to attributes, geometry, or both.
Domain: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].
Example: (of a W3C dateTime with optional precision of .1 second)
2017-12-21T17:58.03.1-05:00 (representing a record updated on December 21, 2017 at 5:58 and 3.1 seconds PM US Eastern Standard Time);
2017-07-11T08:31:15.2-04:00 (representing a record updated on July 11, 2017 at 8:31 and 15.2 seconds AM US Eastern Daylight Time)

4.38 Discrepancy Agency ID

Description: Agency that receives a Discrepancy Report (DR), should a discrepancy be discovered, and will take responsibility for ensuring discrepancy resolution. This may or may not be the same as the 9-1-1 Authority. This MUST be represented by a domain name that is an Agency Identifier as defined in the NENA Master Glossary.
Domain: None
Example: Vermont911.vt.us.gov; nct911.dst.tx.us

4.39 Display Name

Description: A description or "name" of the service provider that offers services within the area of a PSAP or an Emergency Service Boundary. This value MUST be suitable for display.
Domain: None
Example: New York Police Department; Med-Life Ambulance Services

4.40 Effective Date

Description: The date and time that the record is scheduled to take effect.
Domain: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].
Example: (of a W3C dateTime with optional precision of .1 second)
2017-02-18T02:30:00.1-05:00 (representing a record that will become active on February 18, 2017 at 2:30 and 0.1 seconds AM US Eastern Standard Time);
2017-10-09T13:01:35.2-04:00 (representing a record that will become active on October 9, 2017 at 1:01 and 35.2 seconds PM US Eastern Daylight Time)
Note: This field is used when time and date of a change is known. For example, the time and date an annexation takes effect.

4.41 Elevation

Description: The elevation, given in meters above a reference surface defined by the coordinate system, associated with the site/structure address.
Domain: Restricted to whole numbers.
Example: "68" representing the elevation (in meters) associated with the address "123 Main Street, Suite 401"
Note: WGS84 (GPS) elevation is measured as height above the ellipsoid, which varies significantly from height above the geoid (approximately Mean Sea Level).

4.42 Emergency Service Boundary NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Emergency Service Boundary and PSAP Boundary. Each record in the Emergency Service Boundary layer and the PSAP Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID". Emergency Service Boundary data is unique in that the data fields and their attributes are only a template to be reused for each Emergency Service Boundary. For the Emergency Service Boundary, there MAY be a separate dataset for Law, Fire, and EMS, and other Emergency Services such as Poison Control, Forest Service, Coast Guard, and potentially many others.
Domain: None
Example: It is suggested that the Emergency Service Boundary NENA Globally Unique ID start with the type of emergency service (e.g. EMS, LAW, FIRE, PSAP).

- Feature ID 243 in the EMS Emergency Service Boundary layer would be represented as EMS243@911Authority_domain.state.us
- Feature ID 44 in the Law Emergency Service Boundary layer would be represented as LAW44@911Authority_domain.state.us
- Feature ID 18 in the Fire Emergency Service Boundary layer would be represented as FIRE18@911Authority_domain.state.us
- Feature ID 7 in the PSAP Boundary layer would be represented as PSAP7@911Authority_domain.state.us

Note: When an Emergency Service Boundary crosses into one or more states, the Emergency Service Boundary SHOULD be split at the State Boundary or State Equivalent with the State and the Emergency Service Boundary NENA Globally Unique ID being the only difference in the attributes.

4.43 ESN

Description: A 3-5 character alphanumeric string that represents an Emergency Service Zone (ESZ).
Domain: Characters from 000 to 99999
Example: 54321; 120; 001
Note: An Emergency Service Zone (ESZ) is not the same as an Emergency Service Boundary as outlined in this document. ESZ is used for 10-digit routing in Legacy Systems and is not used in a full NG9-1-1 implementation.

4.44 ESN Left:

Description: The Emergency Service Number (ESN) on the Left side of the road segment relative to the FROM Node.
Domain: Characters from 000 to 99999
Example: 5422; 124; 005

4.45 ESN Right:

Description: The Emergency Service Number (ESN) on the Right side of the road segment relative to the FROM Node.
Domain: Characters from 000 to 99999
Example: 5423; 125; 007

4.46 ESRD or first ESRK

Description: Pseudo ANI, for the Emergency Service Routing Digit (ESRD) or the Emergency Service Routing Key (ESRK) as provided on the wireless providers wireless routing spreadsheet.
Domain: 10 digit whole numbers
Example: 5121112123
Note: ESRDs and ESRKs are used for 10-digit routing in Legacy Systems and are not used in a fully transitioned NG9-1-1 implementation that does not include legacy emergency service gateways. For more information, see NENA Wireless Call Routing & Testing Validation Standard 57-002 [11], https://www.nena.org/?page=WirelessRoutingTest.

4.47 Expiration Date

Description: The date and time when the information in the record is no longer considered valid.
Domain: Date and Time may be stored in the local database date/time format with the proviso that local time zone MUST be recorded and time MUST be recorded to a precision of at least 1 second and MAY be recorded to a precision of 0.1 second. If the local database date/time format does not meet these specifications, the database SHOULD record both the local date/time format and a string conforming to W3C dateTime format as described in XML Schema Part 2: Datatypes Second Edition [10].
Example: (of a W3C dateTime with optional precision of .1 second)
2017-02-18T02:30:00-05:00.1 (representing a record that will expire and no longer be valid on February 18, 2017 at 2:30 and 0.1 seconds AM US Eastern Standard Time);
2017-10-09T13:01:35.2-04:00 (representing a record that will expire and no longer be valid on October 9, 2017 at 1:01 and 35.2 seconds PM US Eastern Daylight Time)
Note: This field is used when the time and date of a change is known. For example, the time and date an annexation takes effect and the previous boundary is retired.

4.48 Floor

Description: A floor, story, or level within a building.
Domain: None
Example: Floor 5; 5th Floor; Mezzanine

4.49 Hydrology Polygon Name

Description: Name of a lake, pond, waterway, or similar body of water.
Domain: None
Example: Mirror Lake; intracoastal waterway

4.50 Hydrology Polygon Type

Description: Type of water body.
Domain: None
Example: lake; pond; stream; river

4.51 Hydrology Polygon NENA Globally Unique ID

Description: The NENA Globally Unique ID for each hydrology polygon. Each record in the Hydrology Polygon layer MUST have a globally unique ID. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: HYDP431@911Authority_domain.state.us

4.52 Hydrology Segment Name

Description: The name of a creek, stream, river, or similar linear water feature.
Domain: None
Example: Willow Creek; Red River

4.53 Hydrology Segment Type

Description: The type of surface water.
Domain: None
Example: stream; river

4.54 Hydrology Segment NENA Globally Unique ID

Description: The NENA Globally Unique ID for each hydrology segment. Each record in the Hydrology Line layer MUST have a globally unique ID. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: HYDS543@911Authority_domain.state.us

4.55 Incorporated Municipality

Description: The name of the Incorporated Municipality or other general-purpose local governmental unit (if any) where the address is located.
Domain: None; however, use "Unincorporated" if the address is not within an incorporated local government.
Example: Southlake; Alpine; Unincorporated

4.56 Incorporated Municipality Left

Description: The name of the Incorporated Municipality or other general-purpose local governmental unit (if any), on the Left side of the road segment relative to the FROM Node.
Domain: None; however, use "Unincorporated" if the address is not within an incorporated local government.
Example: Lexington; Columbus; Unincorporated

4.57 Incorporated Municipality Right

Description: The name of the Incorporated Municipality or other general-purpose local governmental unit (if any), on the Right side of the road segment relative to the FROM Node.
Domain: None; however, use "Unincorporated" if the address is not within an incorporated local government.
Example: Tampa; Yonkers; Unincorporated

4.58 Incorporated Municipality NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Incorporated Municipality Boundary. Each record in the Incorporated Municipality Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 18 in the Incorporated Municipality Boundary layer would be represented as INCM18@9-1-1Authority_domain.state.us

4.59 Landmark Name Part

Description: The name or collection of names by which a prominent feature is publicly known. This element is defined in CLDXF (NENA-STA-004) [2] as a US-specific extension of PIDF-LO per RFC 6848 [5].
Domain: None
Example: University of South Florida; Sun Dome (a part of University of South Florida Sun Dome)
Note: There are two landmark name elements: Landmark Name Part and Complete Landmark Name. Within a record, Landmark Name Part MAY occur multiple times, while Complete Landmark Name MAY occur only once. When a landmark is denoted by multiple names in a series (such as "University of South Florida" and "Sun Dome," an arena on the university campus), the Landmark Name Part element holds the separate individual names, and the Complete Landmark Name holds the complete combination. The Landmark Name Part element also allows specification of the order in which the separate names SHOULD be combined into the complete name. This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.60 Landmark Name Part Order

Description: The order in which to concatenate Landmark Name Parts where 1 is the first (or leftmost) Landmark Name Part, 2 is the second Landmark Name Part, 3 is the third Landmark Name Part, etc.
Domain: Whole numbers starting at 1
Example: 1; 2; 3

4.61 Landmark Name Part NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Landmark Name Part. Each record in the Landmark Name Part Table MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 300 in the Landmark Name Part Table would be represented as LMNP300@911Authority_domain.state.us

4.62 Last ESRK

Description: The last 10-digit number in the Emergency Service Routing Key (ESRK) pseudo ALI range
Domain: 10-digit whole numbers
Example: 5121112130
Note: Used for 10-digit routing in Legacy Systems and is not used in a fully transitioned NG9-1-1 implementation that does not include legacy emergency service gateways.

4.63 Latitude

Description: The angular distance of a location north or south of the equator as defined by the coordinate system, expressed in decimal degrees.
Domain: +90 degrees to -90 degrees
Example: 80.868686

4.64 Left Address Number Prefix

Description: An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Left side of the road segment relative to the FROM Node. It contains any alphanumeric characters, punctuation, and spaces preceding the Left FROM Address and Left TO Address.
Domain: None
Example: "101-" in "101-123 Grid Drive"; "N" in "N46999 Holden Road"; "0" in "012 Portland D"

4.65 Left FROM Address

Description: In a GIS Road Centerlines layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO Node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Left FROM address is the address number on the Left side of the road segment relative to the Left FROM Node.
Domain: Whole numbers from 0 to 999999
Example: See Figure 4-1 below
Note: This address can be higher than the Left TO Address

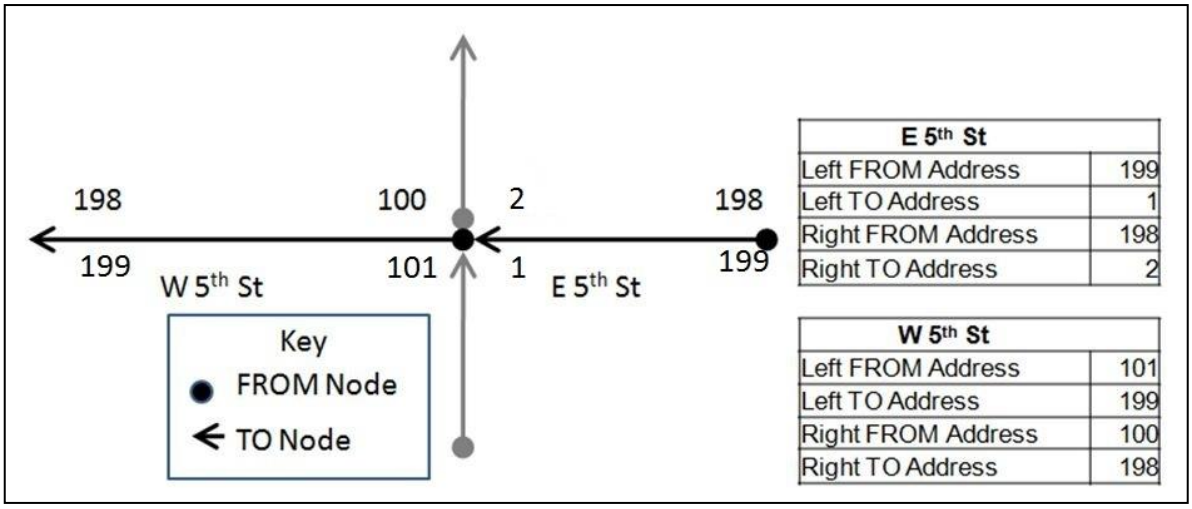

Figure 4-1 Example of Left FROM, Left TO, Right FROM, and Right TO Addresses

4.66 Left TO Address

Description: In a GIS, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO Node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Left TO address is the address number on the Left side of the road segment relative to the Left TO Node.
Domain: Whole numbers from 0 to 999999
Example: See Figure 4-1 above
Note: This address can be lower than the Left FROM Address.

4.67 Legacy Street Name

Description: The street name field as it would appear in the MSAG, as assigned by the local addressing authority.
Domain: None
Example: "STATE" in "STATE ST"; "ELMWOOD" in "N ELMWOOD AVE"
Note: Legacy Street Name and the additional Legacy Street Name Parts (Legacy Street Name Post Directional, Legacy Street Name Pre Directional, and Legacy Street Name Type), are included in the GIS Data Model to provide backward compatibility with legacy map displays and Computer Aided Dispatch (CAD) systems. These fields should be used to reflect attribute parsing that ensures the continuing function of existing systems.

4.68 Legacy Street Name Post Directional

Description: The trailing street direction suffix as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.
Domain: N, S, E, W, NE, NW, SE, SW
Example: "E" in "CHURCH ST E"

4.69 Legacy Street Name Pre Directional

Description: The leading street direction prefix as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.
Domain: N, S, E, W, NE, NW, SE, SW
Example: "S" in "S PINE AVE"

4.70 Legacy Street Name Type

Description: The valid street abbreviation as it previously existed prior to the adoption of the NG9-1-1 Data Model as assigned by the local addressing authority.
Domain: As it existed prior to the adoption of the NG9-1-1 Data Model; MAY be blank
Example: "ST" for "STREET," "STR" for "STREET," "BLVD" for "BOULEVARD," "AVE" for "AVENUE," "TRACE" for "TRACE"

4.71 Longitude

Description: The angular distance of a location east or west of the prime meridian of the coordinate system, expressed in decimal degrees.
Domain: -180 degrees to +180 degrees
Example: -112.945833

4.72 Market ID

Description: The mobile switch ID provided on the wireless routing spreadsheet
Domain: None
Example: 87-83; 00062

4.73 Mile Post

Description: A distance travelled along a route such as a road or highway, typically indicated by a milepost sign. There is typically a post or other marker indicating the distance in miles/kilometers from or to a given point.
Domain: None
Example: Milepost 13; Mile Marker 327.5, Station 101 North
Note: Mile post numbers, which may or may not be an actual mile post distance, are useful for specifying locations along interstate highways, recreational trails, navigable waterways and other unaddressed routes, as well as stretches of county, state, federal, and other routes where distance measurements are posted. Mile post numbers are a numeric measurement from a beginning point and MAY be used in place of, or in addition to, Address Numbers. This element is a conditional element. Including it as a conditional field within the Site/Structure Address Points layer allows for another means of location verification, particularly at the PSAP level. Including the field allows for matching an Address, assigned by an Addressing Authority using the local addressing interval, to the Mile Marker. It should be noted that Mile Markers may not be placed at the exact mile intervals; due to post placement issues such as underground rock ledges, bridges, etc. Tying an Address to the Mile Maker reduces potential ambiguity about location. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.74 Mile Post Indicator

Description: Indicator of the type of mile post measurement.
Domain: P for (Posted); or L for (Logical/calculated)
Example: P, L

4.75 Mile Post Measurement Value

Description: Linear distance from a reference point, or the actual value of the distance measurement.
Domain: None
Example: 357.44; 10.0

4.76 Mile Post Route Name

Description: The primary route name assigned to the mile marker
Domain: None
Example: IH 35E; US 66

4.77 Mile Post Type

Description: The type of mile marker
Domain: None
Example: Road; Waterway; Beach; Trail

4.78 Mile Post NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Mile Marker Location. Each record in the Mile Marker Location layer MUST have a globally unique ID. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 5214 in the Mile Marker Location layer would be represented as MP5214@911Authority_domain.state.us

4.79 Mile Post Unit of Measurement

Description: Unit of measurement used for mile post value
Domain: Standardized units of measure
Example: miles; nautical miles; feet; kilometers

4.80 MSAG Community Name

Description: The Community name associated with an address as given in the MSAG and may or may not be the same as the Community Name assigned by the United States Postal Service (USPS).
Domain: None
Example: Cypress; Spring; Austin
Note: Used in Legacy Systems and is not used in a full NG9-1-1 implementation.

4.81 MSAG Community Name Left

Description: The existing MSAG Community Name on the Left side of the road segment relative to the FROM Node.
Domain: None
Example: Harris County
Note: Used in Legacy Systems and is not used in a full NG9-1-1 implementation.

4.82 MSAG Community Name Right

Description: The existing MSAG Community Name on the Right side of the road segment relative to the FROM Node.
Domain: None
Example: Crystal City
Note: Used in Legacy Systems and is not used in a full NG9-1-1 implementation.

4.83 Neighborhood Community

Description: The name of an unincorporated neighborhood, subdivision, or area, either within an incorporated municipality or in an unincorporated portion of a county or both, where the address is located.
Domain: None
Example: Copperfield; University Heights; Shady Oaks Mobile Home Park
Note: Neighborhood communities are only used when they are known and have a clearly defined boundary. Neighborhood communities are usually not used for addressing purposes, but are often used as differentiators within an area that have the same or similar sounding street names.

4.84 Neighborhood Community Left

Description: The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Left side of the road segment relative to the FROM Node.
Domain: None
Example: East Harlem; Cypress Meadows Subdivision

4.85 Neighborhood Community Right

Description: The name of an unincorporated neighborhood, subdivision or area, either within an incorporated municipality or in an unincorporated portion of a county or both, on the Right side of the road segment relative to the FROM Node.
Domain: None
Example: Edgewater Park; The Meadows

4.86 Neighborhood NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Neighborhood Community Boundary. Each record in the Neighborhood Community Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 22 in the Neighborhood Community Boundary layer would be represented as NBRHD22@911Authority_domain.state.us

4.87 One-Way

Description: The direction of traffic movement along a road in relation to the FROM node and TO node of the line segment representing the road in the GIS data. The one-way field has three possible designations: B (Both), FT (From-To) and TF (To-From).
B – Travel in both directions allowed
FT – One-way traveling from FROM node to TO node
TF – One way traveling from TO node to FROM node
Domain: B, FT, TF
Example: See Figure 4-2 below

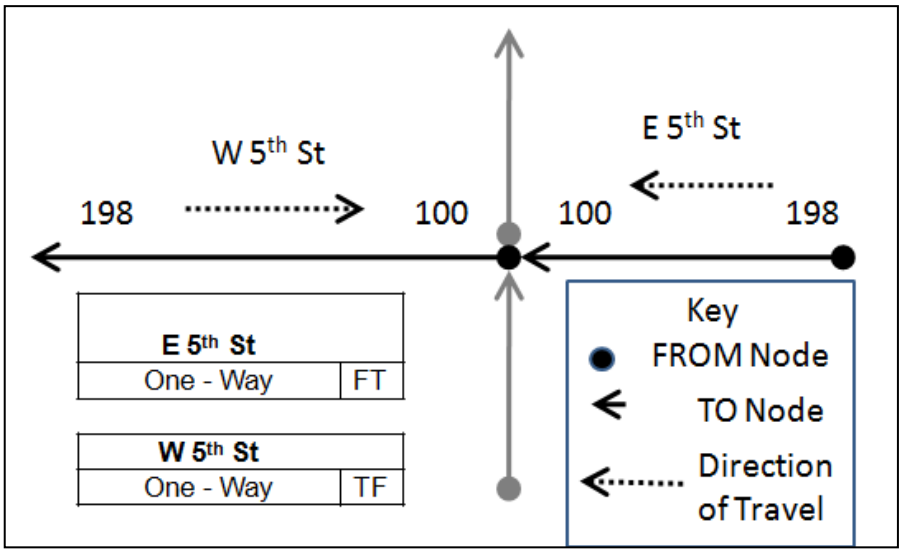

Figure 4-2 Example of One-Way

4.88 Parity Left

Description: The even or odd property of the address number range on the Left side of the road segment relative to the FROM Node.
Domain: O=Odd, E=Even, B=Both, Z=Address Range 0-0
Example: O; E; B; Z

4.89 Parity Right

Description: The even or odd property of the address number range on the Right side of the road segment relative to the FROM Node.
Domain: O=Odd, E=Even, B=Both, Z=Address Range 0-0
Example: O; E; B; Z

4.90 Place Type

Description: The type of feature identified by the address.
Domain: RFC 4589 (http://tools.ietf.org/rfc/rfc4589.txt) is the Registry of Location Types, but the registry can be extended through a formal IANA process defined in Section 5.1 of RFC 4589
Example: Airport; bank; café; club; office; hotel

4.91 Placement Method

Description: The methodology used for placement of the address point
Domain: Geocoding, Parcel, Property Access, Structure, Site, Unknown are defined and can be extended as documented in the "Placement Method" NENA Registry in Section 5.1 below.
Example: Parcel (if the location of the address point was determined based on parcel centroid)

4.92 Postal Code

Description: A system of 5-digit (US) or 7-character codes (Canada) that identify the individual USPS or Canadian Post Office or metropolitan area delivery station associated with an address.
Domain: The domain of values comes from the USPS City State File Product, which is a comprehensive list of ZIP Codes with corresponding USPS city and county names. However, the USPS City State Product only contains city and community names and their associated ZIP Codes. To perform complete 5-digit ZIP coding of address files, City State Product must be used in conjunction with Five-Digit ZIP Product, ZIP + 4® Product, or Carrier Route Product.
Example: 02109 (Postal Code in Boston, MA); M4E 2V4 (Canadian Postal Code in Toronto, ON)
Note: Postal Codes in the US are the same as ZIP codes. The USPS considers ZIP Codes to be delivery routes instead of areas. There may be differences between this depiction and actual ZIP Code mailing address. When Postal Code is used it only includes the ZIP portion in the US and not the ZIP plus 4 part of a ZIP code. The Canadian Postal Code is a uniformly structured, alphanumeric code in the form "ANA NAN" where "A" represents an alphabetic character and "N" represents a numeric character. It is made up of two 3-character segments, "forward sortation area" and "local delivery unit", separated by a space for a total of 7 characters in length.

4.93 Postal Code Left

Description: The Postal Code on the Left side of the road segment relative to the FROM Node.
Domain: See Postal Code
Example: 44114 (Postal Code in Cleveland, OH); H3B 3B0 (Canadian Postal Code in Montreal, QC)

4.94 Postal Code Right

Description: The Postal Code on the Right side of the road segment relative to the FROM Node.
Domain: See Postal Code
Example: 84101 (Postal Code in Salt Lake City, UT); R3C 3Z0 (Canadian Postal Code in Winnipeg, MB)

4.95 Postal Community Name

Description: A city name for the ZIP Code of an address, as given in the USPS City State file.
Domain: Restricted to city names given in the USPS City State File for a given ZIP Code. The USPS City State File Product is a comprehensive list of ZIP Codes with corresponding USPS city and county names. However, the USPS City State Product only contains city and community names and their associated ZIP Codes. To perform complete 5-digit ZIP coding of address files, the USPS City State Product must be used in conjunction with Five-Digit ZIP Product, ZIP + 4® Product, or Carrier Route Product. The USPS Postal City name is the "preferred" name assigned to the post office from which the USPS delivers mail to the address, and may differ from the 9-1-1 city or community name.
Example: Bowen (KY); Cypress (TX)
Note: The Postal Community Name is the name assigned to the post office that delivers mail to a given address, and may differ from the 9-1-1 city or community location. Only the "preferred" Postal Community name as defined by the USPS City State File Product is allowed. The Postal Community name is also defined in the USPS ZIP Code lookup at https://tools.usps.com/go/ZipLookupAction_input

4.96 Postal Community Name Left

Description: A city name for the ZIP Code of an address, as given in the USPS City State file on the Left side of the road segment relative to the FROM Node.
Domain: See Postal Community Name
Example: Dublin; Magnolia

4.97 Postal Community Name Right

Description: A city name for the ZIP Code of an address, as given in the USPS City State file on the Right side of the road segment relative to the FROM Node.
Domain: See Postal Community Name
Example: Wicket; Zanesville

4.98 Provisioning Boundary NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Provisioning Boundary. Each record in the Provisioning Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 455 in the Provisioning Boundary layer would be represented as PB455@911Authority_domain.state.us

4.99 Rail Line Name

Description: The word or phrase that constitutes the distinctive designation of the rail line.
Domain: None
Example: Chester to Rock Hill; Florence to Kingstree to Charleston

4.100 Rail Line Operator

Description: The name of the operator of the rail line or the primary rail company with rights to use the rail line.
Domain: None
Example: UP; CSX

4.101 Rail Line Owner

Description: The name of the owner of the rail right-of-way.
Domain: None
Example: CSX; South Carolina Central Railroad

4.102 Rail Mile Post High

Description: The ending linear reference of the named rail line.
Domain: None
Example: 120, 257.33

4.103 Rail Mile Post Low

Description: The beginning linear reference of the named rail line.
Domain: None
Example: 5.68; 14.0

4.104 Rail Segment NENA Globally Unique ID

Description: The NENA Globally Unique ID for each rail segment. Each record in the Railroad Centerlines layer MUST have a globally unique ID. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: C567NOS@911Authority_domain.state.us;
RAIL1234156@911Authority_domain.state.us

4.105 Right Address Number Prefix

Description: An extension of the Address Number that precedes it and further identifies a location along a thoroughfare or within a defined area, on the Right side of the road segment relative to the FROM Node. It contains any alphanumeric characters, punctuation, and spaces preceding the Right FROM Address and Right TO Address.
Domain: None
Example: "2N3W-" in "2N3W-124 Township Drive", "S" in "S877 Highway 88"

4.106 Right FROM Address

Description: In a GIS Road Centerlines layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Right FROM address number is the address number on the Right side of the road segment relative to the Right FROM Node.
Domain: Whole numbers from 0 to 999999
Example: See Figure 4-3 below
Note: This address can be higher than the Right TO Address.

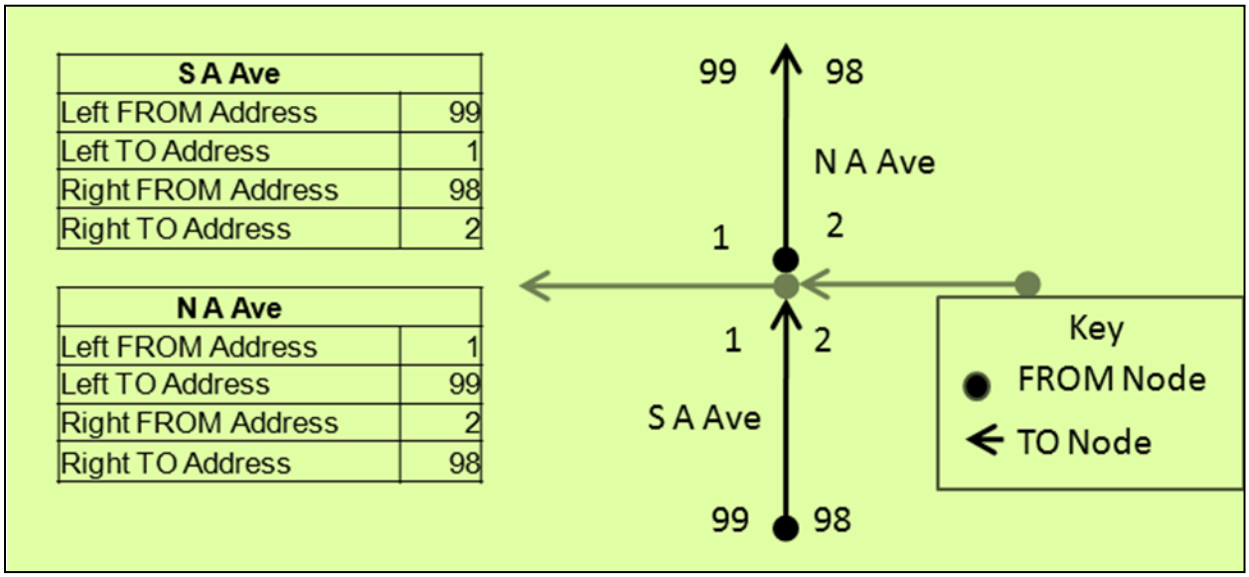

Figure 4-3 Example of Left FROM, Left TO, Right FROM, and Right TO Addresses

4.107 Right TO Address

Description: In a GIS Road Centerlines layer, each feature has a begin point and an endpoint. The FROM Node is the begin point while the TO node is the endpoint. Each has a left side and a right side relative to a begin node and an end node. The Right TO address number is the address number on the Right side of the road segment relative to the Right TO Node.
Domain: Whole numbers from 0 to 999999
Example: See Figure 4-3 above
Note: This address can be lower than the Right FROM Address.

4.108 Road Centerline NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Road Centerline. Each record in the Road Centerlines layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 6237 in the Road Centerline layer would be represented as RCL6237@911Authority_domain.state.us

4.109 Road Class

Description: The general description of the type of road. The Road Classifications used in this document are derived from the US Census MAF/TIGER Feature Classification Codes (MTFCC), which is an update to the now deprecated Census Feature Class Codes (CFCC).
Domain: Primary, Secondary, Local, Ramp, Service Drive, Vehicular Trail, Walkway, Stairway, Alley, Private, Parking Lot, Trail, Bridle Path, Other
Example: Ramp
Note: The Road Class is completely spelled out in the attribute fields. Road Classification is based on the Census road classification found in the MAF/TIGER Feature Class Code (MTFCC) Definitions [13]. The values are taken from the S series information in this document which provided the classification scheme for surface roads and can be found at: https://www.census.gov/geo/reference/mtfcc.html

- *Primary* roads are generally divided, limited-access highways within the interstate highway system or under state management, and are distinguished by the presence of interchanges. These highways are accessible by ramps and may include some toll highways.
- *Secondary* roads are main arteries, usually in the US Highway, State Highway, or County Highway system. These roads have one or more lanes of traffic in each direction, may or may not be divided, and usually have at-grade intersections with many other roads and driveways.

- *Local* roads are generally a paved non-arterial street, road, or byway that usually has a single lane of traffic in each direction. Roads in this classification include neighborhood, rural roads and city streets.
- *Ramp* designates a road that allows controlled access from adjacent roads onto a limited access highway, often in the form of a cloverleaf interchange. Ramps typically do not have address ranges.
- *Service Drive*, which provide access to structures along the highway, usually parallel a limited access highway. If these roads are named and addressed they may be considered local roads.
- *Vehicular Trail* (4WD, snowmobile) is an unpaved trail or path where a four-wheel-drive vehicle, snowmobile, or similar vehicle is required.
- *Walkway* (Pedestrian Trail, Boardwalk) is a path that is used for walking, being either too narrow for or legally restricted from vehicular traffic.
- *Stairway* is a pedestrian passageway from one level to another by a series of steps.
- *Alley* is generally a service road that does not generally have associated addressed structures and is usually unnamed. It is located at the rear of buildings and properties.
- *Private* (service vehicles, logging, oil fields, ranches, etc.) is a road within private property that is privately maintained for service, extractive, or other purposes. These roads are often unnamed.
- *Parking Lot* is the main travel route for vehicles through a paved parking area.
- *Trail* (Ski, Bike, Walking/Hiking Trail) is generally a path used by human powered modes of transportation.
- *Bridle Path* is a path that is used for horses, being either too narrow for or legally restricted from vehicular traffic.
- *Other* is any road or path type that does not fit into the above categories.

Some 9-1-1 Authorities may include unnamed and/or un-addressed trails, paths, and similar "roads" in their GIS data. It is recommended that these not be included with the named and addressed roads for provisioning into the ECRF and the LVF databases. Conversely, the Road Classification MAY be populated so these "roads" can be selected for exclusion and not be part of the data provisioned or updated to the ECRF and the LVF.

4.110 Room

Description: A single room within a building.
Domain: None
Example: Room 137; Lobby

4.111 Seat

Description: A place where a person might sit within a building.
Domain: None
Example: "Cubicle 5A"; "5A"; "Desk 11"; "11"
Note: From the NENA CLDXF Standard (NENA-STA-004) [2]:

- The Seat element "designates a place where a person might sit, such as a seat in a stadium or theater, or a cubicle in an open-plan office or a booth in a trade show" (IETF RFC 4776, section 3.4).
- Subaddress elements typically include both a "type" word (such as "seat" or "desk") and an identifier (a specific name or number). Include both the type word, the identifier in this element and any separating characters or spaces.
- The type word may precede or follow the identifier ("Registration Desk" vs. "Desk 17"). Either order is acceptable; local usage should be followed. In some cases, no type word is used.

4.112 Sector ID

Description: The cell sector ID of the cell tower sector antenna face associated with the location
Domain: None
Example: Omni; 1; 3

4.113 Sector Orientation

Description: The orientation of cell tower sector antenna face associated with the location
Domain: None
Example: Omni; N; SE

4.114 Service Number

Description: The numbers that would be dialed on a 12-digit keypad to reach the emergency service appropriate for the location. This is not the same as an Emergency Service Number (ESN) in Legacy E9-1-1 systems. This field is used for all Emergency Boundaries including PSAP; Law; Fire; EMS; and others such as Poison Control. Within the United States the Service Number for most emergency services is 9-1-1, however, there may be Emergency Service boundaries that have a different number that may be associated with them such as Poison Control. Additionally, in areas outside of the United States, different numbers may be used for Law, Fire, and EMS – this field would be used to denote those numbers.
Domain: A dialable number or dial string
Example: 911; 18002221212

4.115 Service URI

Description: URI for call routing. This attribute is contained in the Emergency Service Boundary layer and will define the Service URI of the service. The URI is usually a Session Initiation Protocol (e.g. SIP or SIPs) URI but MAY be a telephone number (e.g. tel) URI that defines the route to reach the service.
Domain: Registered domain name; RFC 1035 (available at https://www.ietf.org/rfc/rfc1035.txt) defines the process to register a domain name.
Example: sips:sos.psap@eoc.houston.tx.us; tel:+12025551212

4.116 Service URN

Description: The URN used to select the service for which a route is desired. The ECRF is queried with a location and a service URN that returns the Service URI.
Domain: RFC 5031 defines the Service URN; NENA-STA-010 [1] defines the domain of allowable values. PSAP boundaries SHOULD only contain features with Service URN values of "urn:nena:service:sos.psap". Values to be used for emergency service boundaries for other responding agencies are found in NENA Registry
System - urn:nena:service:responder registry.
Example: urn:nena:service:sos.psap; urn:nena:service:responder.police; urn:nena:service:responder.fire; urn:nena:service:responder.ems
Note: A boundary with a service URN of urn:service:sos MUST be provisioned in the ECRF. 9-1-1 Authorities responsible for the ECRF or their designees/vendors will need to generate such a boundary from the boundaries in all the GIS systems provisioned to that ECRF. If provisioning a boundary to the ECRF, it MUST conform to the definition of Service Boundary in NENA-STA-010 [1], Appendix B.

4.117 Site ID

Description: Some carriers have cell site identifications unique for that cell site within the entire carrier network.
Domain: None
Example: XMO92348; NX0552-1432

4.118 Site NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Site/Structure Address Point. Each record in the Site/Structure Address Points layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 2002 in the Site/Structure Address Points layer would be represented as SITE2002@911Authority_domain.state.us

4.119 Speed Limit

Description: Posted Speed Limit in MPH in US or Km/h in Canada
Domain: Whole numbers from 1 to 999
Example: 35; 55; 70

4.120 State

Description: The name of a state or state equivalent, represented by the two-letter abbreviation given in USPS Publication 28 [14], Appendix B. A state is a primary governmental division of the United States.
Domain: ISO 3166-2 includes the same abbreviations as USPS Publication 28 [14], Appendix B, with the exception of the additional one for the nine minor uninhabited islands owned by the US: These abbreviations are also freely available at https://www.census.gov/geo/reference/ansi_statetables.html
Example: TN; NM; OR

4.121 State Left

Description: The name of a state or state equivalent on the Left side of the road segment relative to the FROM Node, represented by the two-letter abbreviation given in USPS Publication 28 [14], Appendix B.
Domain: ISO 3166-2 or USPS Publication 28 [14], Appendix B for the US
Example: LA; OK

4.122 State Right

Description: The name of a state or state equivalent on the Right side of the road segment relative to the FROM Node, represented by the two-letter abbreviation given in USPS Publication 28 [14], Appendix B.
Domain: ISO 3166-2 or USPS Publication 28 [14], Appendix B for the US
Example: PA; KY

4.123 State NENA Globally Unique ID

Description: The NENA Globally Unique ID for each State (or its equivalent) Boundary. Each record in the States or Equivalents layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 1 in the States or Equivalents layer would be represented as STATE1@911Authority_domain.state.us

4.124 Street Name

Description: The official name of the road, usually defined by the lowest jurisdictional authority (e.g. city). The street name does not include any street types, directionals, or modifiers.
Domain: None
Example: "Fifth" in "Fifth Avenue"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.125 Street Name Post Directional

Description: A word following the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.
Domain: North, South, East, West, Northeast, Northwest, Southeast, Southwest
Example: "North" in "Elm Avenue North"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.126 Street Name Post Modifier

Description: A word or phrase that follows and modifies the Street Name element, but is separated from it by a Street Name Post Type or a Street Name Post Directional or both.
Domain: None
Example: "Number 5" in "Fire Road Number 5"
"Extension" in "Main Street North Extension"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.127 Street Name Post Type

Description: A word or phrase that follows the Street Name element and identifies a type of thoroughfare in a complete street name.
Domain: Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof.
http://technet.nena.org/nrs/registry/StreetNamePreTypesAndStreetNamePostTypes.xml
Example: "Parkway" in "Ocean Parkway"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.128 Street Name Pre Directional

Description: A word preceding the Street Name element that indicates the direction taken by the road from an arbitrary starting point or line, or the sector where it is located.
Domain: North, South, East, West, Northeast, Northwest, Southeast, Southwest
Example: "South" in "South Congress Avenue"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.129 Street Name Pre Modifier

Description: A word or phrase that precedes and modifies the Street Name element but is separated from it by a Street Name Pre Type or a Street Name Pre Directional or both.
Domain: None
Example: "Alternate" in "Alternate Route 8"
"Old" in "Old North Church Street"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.130 Street Name Pre Type

Description: A word or phrase that precedes the Street Name element and identifies a type of thoroughfare in a complete street name.
Domain: Restricted to values found in the "NENA Registry of Street Name Pre Types and Street Name Post Types" or combinations thereof.
http://technet.nena.org/nrs/registry/StreetNamePreTypesAndStreetNamePostTypes.xml
Example: "Avenue" in "Avenue A"
"Highway" in "Highway 443"
"Bypass Highway" in "Bypass Highway 22"
"Boulevard" in "Boulevard of the Allies"
Note: Occasionally two or more type words occur together before the Street Name element (e.g., Bypass Highway 22). All of the words are placed in the Street Name Pre Type, unless the local address authority has included any of them in Street Name element. If the two type words are not part of the Street Name element and are not separated from each other by a directional word or other word, they are all placed in the Street Name Pre Type. This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.131 Street Name Pre Type Separator

Description: A preposition or prepositional phrase between the Street Name Pre Type and the Street Name. This element is defined in CLDXF (NENA-STA-004) [2] as a US specific extension of PIDF-LO per RFC 6848 [5].
Doman: Restricted to values found in the "NENA Registry of Street Name Pre Type Separators."
http://technet.nena.org/nrs/registry/StreetNamePreTypeSeparators.xml
Example: "of the" in "Avenue of the Stars"
Note: This element is a conditional element. For more details, please see NENA Next Generation 9-1-1 (NG9-1-1) United States Civic Location Data Exchange Format (CLDXF) Standard (NENA-STA-004) [2].

4.132 Switch ID

Description: The wireless switch to which the site is homed or associated with, as given in the wireless routing spreadsheet. For more information see NENA E9-1-1 Wireless Maintenance Call Routing & Testing Validation Standard (NENA 57-002) [11].
Domain: None
Example: 12-3; 002

4.133 Technology

Description: The type of wireless technology used for the cell sector locations.
Domain: None
Example: TDMA; LTE; CDMA

4.134 Unincorporated Community

Description: The name of an Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, where the address is located.
Domain: None
Example: Cypress (TX); Bowen (KY)
Note: An Unincorporated Community typically is a region of land that is not governed by its own local municipal corporation.

4.135 Unincorporated Community Left

Description: The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Left side of the road segment relative to the FROM Node.
Domain: None
Example: Latham (NY); Moose (WY)

4.136 Unincorporated Community Right

Description: The Unincorporated Community, either within an incorporated municipality or in an unincorporated portion of a county, or both, on the Right side of the road segment relative to the FROM Node.
Domain: None
Example: Mountain View (GA); Palmer (MI)

4.137 Unincorporated NENA Globally Unique ID

Description: The NENA Globally Unique ID for each Unincorporated Community Boundary. Each record in the Unincorporated Community Boundary layer MUST have a globally unique ID. When coalescing data from other local 9-1-1 Authorities into the ECRF and LVF, this unique ID MUST continue to have only one occurrence. One way to accomplish this is to append the 9-1-1 Authority's domain to the end of the "locally unique ID".
Domain: None
Example: Feature ID 19 in the Unincorporated Community Boundary layer would be represented as UNINC19@911Authority_domain.state.us

4.138 Unit

Description: A group or suite of rooms within a building that are under common ownership or tenancy, typically having a common primary entrance.
Domain: None
Example: Apartment C2; Penthouse; Suite 710

4.139 Validation Left

Description: Indicates if the address range on the left side of the road segment should be used for civic location validation. A value of "Y" MAY be entered if any Address Number within the address range on the left side of the road segment should be considered by the LVF to be valid. A value of "N" MAY be entered if the Address Number should only be validated using the Site/Structure Address Points layer. If not present, a value of "Y" is assumed.
Domain: Y, N
Example: Y; N
Note: This field does not affect routing of emergency calls, nor display of GIS data. It controls how the LVF determines its response when an address does not match a Site/Structure Address Point, but is within a valid range of a Road Centerline.

4.140 Validation Right

Description: Indicates if the address range on the right side of the road segment should be used for civic location validation. A value of "Y" MAY be entered if any Address Number within the address range on the right side of the road segment should be considered by the LVF to be valid. A value of "N" MAY be entered if the Address Number should only be validated using the Site/Structure Address Points layer. If not present, a value of "Y" is assumed.
Domain: Y, N
Example: Y; N
Note: This field does not affect routing of emergency calls, nor display of GIS data. It controls how the LVF determines its response when an address does not match a Site/Structure Address Point, but is within a valid range of a Road Centerline.

4.141 ZIP Plus-4

Description: The addition of the ZIP Plus-4 refines the mail delivery point down to a specific block or building, and may prove useful to validate locations. ZIP Plus-4 codes change more often than US Postal codes, and this additional data field should make maintaining these optional codes easier.
Domain: Defined by the USPS
Example: "0001" in "02109-0001" (the ZIP Plus-4 code for Boston, MA)

5 NENA Registry System (NRS) Considerations

Whenever a standard has a list of items, especially where the list is used in an XML data structure, and the list is expected to change over time, the list should be maintained in a "Registry". A registry is, at heart, just a table of data, with rows and columns. The Registry is established by a standard, which defines the columns and what they are used for. Each entry in the registry is a row, and has values for the columns specified. The standard that creates the registry usually defines the initial values (row and column content). It also specifies how a new value is added: we call that a "Management Policy".

Registries can be hierarchical (Registry contains sub-registries, nested as needed) if you have a group of registries that are related.

Registries are maintained by the NENA Registry System (NRS), which operates according to NENA-STA-008.2 (formerly 70-001). The existing registries, with all of the content of the registry, are available in stable locations in the NENA website. Registries are stored as XML objects, although through custom style sheets, the registry content is human readable. The intent of storing the registries at stable URLs, in XML form, is that implementers of standards that use registries can automatically include current values in their implementations. NRS will only modify registries according to the management policy specified for that registry.

This section defines one registry to be created in the NENA Registry System.

5.1 Site/Structure Address Point Placement Method Registry

NRS is requested to create a new registry that lists accepted values for the Placement Method of a Site/Structure Address Point. The Site/Structure Address Point Placement Method is defined in this NG9-1-1 GIS Data Model Section 3.2, Site/Structure Address Points, and Section 4.91, Placement Method, and further detailed in the NENA Information Document for Development of Site/Structure Address Point GIS Data for 9-1-1 (NENA-INF-014) [15], Section 3.4 – Address Point Placement Methodologies.

5.1.1 Registry Title/Name

The name of this registry is "*Site/Structure Address Point Placement Method.*"

5.1.2 Parent Registry

None.

5.1.3 Information required to create a new value

A new entry to the Site/Structure Address Point Placement Method Registry requires the identification of a feature used as a reference for placing an address point, an explanation of the spatial reference between the feature and the address point, a graphic depicting the spatial relationship, a link to a document the Registry can connect to that contains this information, and an explanation of how the proposed Site/Structure Address Point Placement Method improves upon the placement methodologies documented in the NENA Information Document for Development of Site/Structure Address Point GIS Data for 9-1-1 (NENA-INF-014) [15], Section 3.4 – Address Point Placement Methodologies.

5.1.4 Management Policy

Addition of a new entry requires an "Expert Review" and "NENA Document Required" as defined in NENA-STA-008.1 (formerly 70-001). This expert should only allow values which are clearly distinct from values already in the registry and for which the provided documentation supports inclusion of the proposed Site/Structure Address Point Placement Method.

5.1.5 Content

Each entry in this registry contains:

- Value - A word or phrase that may be used as a Site/Structure Address Point Placement Method
- Description – An explanation of the placement method used to show the spatial relationship between the referenced feature and the address point.
- Reference – The link to a document the Registry can connect to that explains the placement method.

5.1.6 Initial Values

The registry should have the following entries:

Value	Description	Reference
Geocoding	Placement of an address point to represent an address along a road segment based on the high and low numbers assigned to the road segment using geocoding techniques.	NENA-INF-014
Parcel	Placement of an address point to represent an address associated with a parcel.	NENA-INF-014
Property Access	Placement of an address point to represent an address based on the location of the primary access to a given property.	NENA-INF-014
Site	Placement of an address point to represent an identified, described, or recognized location that may not have a defined boundary or a structure (e.g., campsite, ball field, picnic area, etc.).	NENA-INF-014
Structure	Placement of an address point to represent an address associated with a structure.	NENA-INF-014
Unknown	Default value when the Site/Structure Address Point placement method is unknown.	NENA-STA-006

6 Documentation Required for the Development of a NENA XML Schema

Not Applicable

7 Impacts, Considerations, Abbreviations, Terms, and Definitions

NENA's NG9-1-1 uses GIS data provided by the local 9-1-1 Authority as the core database for civic location validation, all call routing, and PSAP map display functionality.

NENA's NG9-1-1 introduces the concept of an Emergency Services Internet Protocol network (ESInet) to facilitate communications among NG9-1-1 functional elements such as the ESRP, ECRF, LVF, and the PSAP. The ECRF is the primary location based routing element. The LVF is the primary mechanism to determine that a civic address location is valid for routing and dispatch. Both ECRF and LVF use the same underlying GIS data.

The data format described in this document is expressly designed to facilitate conversion to the NENA-STA-010 [1], Appendix B Spatial Interface (SI) data model. This allows a GIS system conforming to this data model, or capable of being automatically converted to this model, to be used to provision the ECRF and the LVF. The former is used to route emergency calls, and the latter is used to validate civic location prior to loading it into a Location Information Server (LIS). LVF validation is analogous to MSAG validation of an address prior to loading it into an ALI within an E9-1-1 system.

If both address points and road centerline ranges exist in the ECRF for the location of the caller, the address point route will be used. If there is no match of address points, but a road centerline/range segment matches, the route for that centerline segment will be used.

7.1 Operations Impacts Summary

The NENA NG9-1-1 GIS Data Model requires higher levels of standardization and attribute detail than existing E9-1-1 GIS data standards contained in NENA Standard Data Formats for 9-1-1 Data Exchange & GIS Mapping (NENA 02-010) [8]. Existing GIS data may need to be manipulated and/or enhanced to conform to this standard structure.

Local 9-1-1 Authorities are responsible for provisioning their NG9-1-1 systems with local GIS data, which may require new procedures, processes, and training.

This GIS data model provides guidance on formatting of GIS data prior to use in NG9-1-1. This document defines the minimum GIS Data Model required for E9-1-1 and NG9-1-1. 9-1-1 Authorities and other agencies must understand that a common baseline GIS data model must be established, recognized, and followed in order to participate in an interoperable NG9-1-1 environment. This document provides that baseline GIS data model.

This NG9-1-1 GIS Data Model represents not only the minimum set of GIS data which should be used for 9-1-1, but also recommended and in some cases locally required data for public safety. Non-standard field names and their associated attributes, as well as additional GIS data layers not discussed within this document, are allowed in order to meet individual entity needs. For example, additional data fields may be added to the road centerline data for number of lanes, maintaining entity, planning district, and so forth. Additional layers, data fields, and associated attributes are allowed and encouraged to meet local, regional, and other organizational needs but are beyond the scope of this document.

7.2 Technical Impacts Summary

Hardware and software manufacturers may need to adapt their existing Customer Premise Equipment (CPE) or call handling software, Computer Aided Dispatch (CAD), map display, and related software to support this new format.

Service vendors may need to adapt their existing processes, procedures, and services to meet the new data needs.

Originating service providers may need to adapt existing software and systems to handle the new formats and use the PIDF-LO data structure.

7.3 Security Impacts Summary

GIS data may contain confidential, proprietary, and/or sensitive information which must not be introduced into the public domain. For example, certain information that telephone companies, other data providers, and the Federal government (e.g. United States Postal Service) furnish to local governmental entities, including those which provide 9-1-1 emergency services, are confidential under many state laws. Such information may be considered confidential and/or proprietary when included in databases and on maps used by entities in the provision of emergency

services. Confidential information must not be redistributed outside of 9-1-1. Sensitive information implies a loss of security when disclosed to others.

More information regarding guidelines for data and physical security is located in NENA Security for Next-Generation 9-1-1 (NENA 75-001) [16], NENA Next Generation 9-1-1 Security (NG-SEC) Audit Checklist (NENA 75-502) [17], and NENA NG9-1-1 Security Information (NENA-INF-015) [18] documents.

7.4 Recommendation for Additional Development Work

This document references existing NENA Standards. Additional work may be required as follows:

Section	Reference to Future Work
2.2	Development of a Metadata template based on the NG9-1-1 GIS Data Model Standard.
2.7	Defer vertical accuracy requirement language to future work.
3	This document substantially refers to US standards; it is expected to be extended to Canada in a future revision of this document. Additional future work will include inclusion of address location polygons, revision of the Cell Sector Location data layer, and movement to a true relational database structure.
3	Development of a Database Schema Crosswalk that establishes comparable matches between CLDXF (NENA-STA-004) [2], NENA-STA-010 [1] Appendix B, and NG9-1-1 GIS Data Model (NENA-STA-006) is deferred for future work.
3 and 4	Provisioning of data from authoritative sources will be addressed in a future revision of this document. Additional work is needed to determine what standard mechanisms are needed, if any, for detecting inadvertent or malicious provisioning of data from a non-authoritative source to the ECRF and LVF.
3.1	Additional work for atypical street naming and addressing is needed, such as county line roads with different street names and address ranges on the same road centerline and the naming of ramps (e.g. "West Beltline Highway eastbound United States Highway 14 eastbound off").
3.1	Guidance on the representation of driveways in the Road Centerlines layer deferred to future work.
3.1	Consideration of how to represent non-traversable roads is deferred for future work.
3.1	Consideration of adding a provisioning control field will be considered for future work
3.1 and 3.2	Clarification on "where the address is located" in the definitions of State, County, Incorporated Municipality, Unincorporated Community, and Neighborhood Community deferred for future work.
3.1 and 3.2	Clarification on how to handle tribal nations, military bases, and other general purpose governmental units in the place name fields is deferred for future work.

Section	Reference to Future Work
3.1 and 3.2	Future work will implement a more relational approach to facilitate data integration, data management, and attribute consistency between layers. For example: • Currently, an address point record includes both address attributes and geographic location. A normalized schema stores address points separately and links them to address records in a one-to-many relationship. A typical use case would be an address point representing a single multifamily structure linked via a primary key to multiple address records for individual units. This would facilitate the editing of point locations and avoid potential problems associated with stacking points. • Road centerlines and address points may be based on different data sources and may have inconsistent attributes. A relational approach would involve linking both address points and road centerlines to an authoritative list of street names for each jurisdiction, thus ensuring consistency between the two layers.
3.2	In many cases, it is impossible to determine exactly which of multiple structures to associate with a given address. As detailed in NENA-INF-014 [15], Development of Site/Structure Address Point GIS Data for 9-1-1, a single point may be used to represent a collection of buildings at a site. Future work on the data model will consider the use of a multipoint in such situations. Multipoints are first-class GIS features in the Simple Features standards implemented by OGC 06-103r4 and the parallel ISO 19125-1:2004. Advantages of multipoints include the ability to account for all structures and to convey more information about site configuration than a single, arbitrarily placed point. It will also be necessary to consider disadvantages such as lack of support in vendor systems and complications with GIS overlay operations.
3.2	Consideration for developing further guidance and clarification for populating the Building field is deferred for future work and will be revisited in the NENA CLDXF Standard (NENA-STA-004) [2] document.
3.2	Consideration for subaddress fields to be split into two fields (Type and Value) is deferred for future work and will be revisited in the NENA CLDXF Standard (NENA-STA-004) [2] document.
3.2	Inclusion of a site/structure polygon layer is deferred to future work.
3.2	Document that stacked address points will result in topology errors and goes against existing GIS data standards. Deferred to future work.
3.2	The Location Type Registry references the Internet Engineering Task Force Request for Comments (RFC) 4589 (http://tools.ietf.org/rfc/rfc4589.txt). Additional location types for this registry need to be defined and be worked on through the formal Internet Assigned Numbering Authority as defined in Section 5.1 of RFC 4589. Future review of the Location Type Registry is needed to see if it could potentially be used as a domain for Place Type.

Section	Reference to Future Work
3.3 and 3.4	NENA-STA-010 [1], Appendix B includes County, Incorporated Municipality, Unincorporated Community, and Neighborhood Community fields in the PSAP Boundary and Emergency Service Boundaries. Additional work is needed with the i3 Architecture Workgroup on usage of these fields.
3.7	Landmark Name Parts can quickly become complex and will be revisited in both the NENA CLDXF Standard (NENA-STA-004) [2] document and a future version of this document.
3.14	Review of planned FRA (Federal Railroad Administration) rail data standardization efforts to consider alignment between those efforts and a future version of this document.
3.14	Inclusion of railroad crossing information deferred to future work.
3.15 and 3.16	The National Hydrography Dataset (NHD) is expected to assess the relationship between the representations of hydrologic data relative to elevation data. Additional future work should assess the alignment between the Hydrology Line and Hydrology Polygon layers and future revisions to the NHD data model.
7.1	Many local addressing authorities and originating service providers are either unaware of, or unwilling to adopt, the address formatting standard, based on CLDXF (NENA-STA-004) [2], which is presented in this document. In these cases, addresses MUST be converted to this standard before provisioning to an NG9-1-1 system. NENA should develop strategies to support local addressing authorities and originating service providers in moving towards adoption of the address standards in this document.
7.1	Additional guidance is needed beyond what is provided by NENA-71-501 [19] on synchronizing with existing ALI/MSAG data in the transition to an NG9-1-1 environment. Examples of potential discrepancies between geography, ALI/MSAG, and records from local addressing authorities include: • Addresses may have been created for phone lines to ATM's and other equipment that are not valid civic addresses. • There may be confusion between the mapping of MSAG communities, the official boundaries of incorporated municipalities and other "places" in NG9-1-1, and the place names found in postal addresses.

7.5 Anticipated Timeline

The time required to develop the necessary NG9-1-1 GIS data will depend on the level and quality of one's existing GIS data. Since NG9-1-1 requires adherence to the GIS database schema standards outlined in this document, the time required to migrate to the NG9-1-1 GIS data model will vary.

It is strongly advised that one go through the process of standardizing and synchronizing their existing GIS data with their MSAG and ALI as described in NENA Information Document for Synchronizing Geographic Information System Databases with MSAG & ALI (NENA 71-501) [19].

NENA recommends the MSAG and GIS data reach a 98% or greater match rate, with an option of matching with ALI, before using GIS data for NG9-1-1.

7.6 Cost Factors

In order to create and enhance the quality and accuracy of GIS data, the 9-1-1 Authority may need to dedicate additional resources for GIS data development and maintenance. The 9-1-1 Authority is ultimately responsible for the quality and accuracy of the GIS data used in the 9-1-1 system, even if the development and/or maintenance of this data is outsourced, shared, or obtained through others. It is anticipated that the rigorous requirements and highly standardized nature of the GIS data needed for a NENA NG9-1-1 system to function may require:

- Additional training, personnel, and/or time to update or modify existing GIS data to meet this Standard
- New or revised procedures to meet the requirements of NG9-1-1 data
- Software upgrades or updates
- Improvements to the currency, accuracy, quality, and completeness of existing data
- Security-related standard operating procedures be developed or revised
- In all cases, strict adherence to the minimum standards outlined in this document is required to ensure compatibility with NG9-1-1 systems and interoperability.

7.7 Cost Recovery Considerations

Collaborating, coordinating, and sharing the cost of data development and maintenance with neighboring 9-1-1 entities and other stakeholders outside of 9-1-1 may offset the cost of collecting and maintaining high quality, current GIS data. Other stakeholders include local and state planning departments, engineering, taxing authorities, and public/private partnerships with utilities, and other organizations that have need for highly accurate and current GIS data. Consistent addressing, data scrubbing, and data maintenance will benefit all stakeholders that can use this address information.

7.8 Additional Impacts (non-cost related)

Certain information or requirements contained in this NENA document are known to have 9-1-1 technical impacts that may include:

- Better performance of all 9-1-1 systems
- Better information available for Public Safety
- Reduced response time
- Minimization of miscommunication
- Efficient use of limited resources
- Improved communications with adjacent 9-1-1 entities to ensure data sets match properly at the boundaries

7.9 Abbreviations, Terms, and Definitions

See NENA Master Glossary of 9-1-1 Terminology, NENA-ADM-000 [20], for a complete listing of terms used in NENA documents. All abbreviations used in this document are listed below, along with any new or updated terms and definitions.

Term or Abbreviation (Expansion)	Definition / Description
Agency ID (Agency Identifier)	A domain name for an agency used as a globally unique identifier.
ALI (Automatic Location Identification)	The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone, and supplementary emergency services information of the location from which a call originates.
Associated Location	Defined by the Alliance for Telecommunications Industry Solutions in ATIS-0700015.v003, an Associated Location is a location (civic, geodetic, or polygon) within the designated PSAP jurisdiction that may be used in wireless call scenarios to route the call toward the designated PSAP.
CAD (Computer Aided Dispatch)	A computer based system which aids PSAP telecommunicators by automating selected dispatching and record keeping activities.
CLDXF (Civic Location Data Exchange Format)	A set of data elements that describe detailed street address information.
Data Domain	An enumerated listing or range of valid values that may be used as an attribute. If no data domain is provided, then any value that meets the format criteria may be used.
Data Layer	Geospatial features and feature attributes maintained in a GIS database that represent a common data theme. Feature data represent geographic entities as points, lines, and polygons. Data layer may also be referred to as a "layer" (example the streets layer).
Data Model	A set of standardized design specifications for objects in a GIS database or other database. A data model defines the data layers, data features, data fields and attributes, and other defining requirements of a database for use in an application.

Term or Abbreviation (Expansion)	Definition / Description
E9-1-1 (Enhanced 9-1-1)	A telephone system which includes network switching, database, and Public Safety Answering Point premise elements capable of providing automatic location identification data, selective routing, selective transfer, fixed transfer, and a call back number. The term also includes any enhanced 9-1-1 service so designated by the Federal Communications Commission in its Report and Order in WC Docket Nos. 04-36 and 05-196, or any successor proceeding.
ECRF (Emergency Call Routing Function)	A functional element in an ESInet which is a Location-to-Service Translation (LoST) protocol server where location information (either civic address or geo-coordinates) and a Service URN serve as input to a mapping function that returns a URI used to route an emergency call toward the appropriate PSAP for the caller's location or towards a responder agency. • External ECRF: An ECRF instance that resides outside of an ESInet instance. • Internal ECRF: An ECRF instance that resides within and is only accessible from an ESInet instance.
EMS (Emergency Medical Service)	A service providing out-of-hospital acute care and transport to definitive care, to patients with illnesses and injuries which the patient believes constitute a medical emergency.
ESInet (Emergency Services IP Network)	An ESInet is a managed IP network that is used for emergency services communications, and which can be shared by all public safety agencies. It provides the IP transport infrastructure upon which independent application platforms and core services can be deployed, including, but not restricted to, those necessary for providing NG9-1-1 services. ESInets may be constructed from a mix of dedicated and shared facilities. ESInets may be interconnected at local, regional, state, federal, national, and international levels to form an IP-based inter-network (network of networks). The term ESInet designates the network, not the services that ride on the network. See NG9-1-1 Core Services.

Term or Abbreviation (Expansion)	Definition / Description
FGDC (Federal Geographic Data Committee)	The Federal Geographic Data Committee (FGDC) is an interagency committee that promotes the coordinated development, use, sharing, and dissemination of geospatial data on a national basis. https://www.fgdc.gov
Geocoding	Interpolation-based computational techniques to derive estimates of geographic locations.
Geospatial Call Routing	The use of specialized software and GIS data to route an emergency call to the appropriate PSAP or emergency service provider based on the civic location or geographic coordinates provided with the call.
GIS (Geographic Information System)	A system for capturing, storing, displaying, analyzing, and managing data and associated attributes which are spatially referenced.
GIS Attribute	Tabular information about features contained in GIS data, commonly referred to as an "attribute".
IETF (Internet Engineering Task Force)	Lead standard setting authority for Internet protocols.
IP (Internet Protocol) Client	Used to refer to the IP endpoint communications equipment or application that is used to originate a voice, video or text request for emergency services (e.g., by calling 9-1-1). The term IP device or IP endpoint may also be used.
ISO (International Standards Organization)	An independent, non-governmental international organization with a membership of 161 national standards bodies. www.iso.org
LVF (Location Validation Function)	A functional element in an NGCS that is a LoST protocol server where civic location information is validated against the authoritative GIS database information. A civic address is considered valid if it can be located within the database uniquely, is suitable to provide an accurate route for an emergency call, and adequate and specific enough to direct responders to the right location.
MCS (MSAG Conversion Service)	A web service providing conversion between PIDF-LO and MSAG data.

Term or Abbreviation (Expansion)	Definition / Description
Metadata	A record of information, usually presented as an eXtensible Markup Language (XML) document, which captures the basic characteristics of a data or information resource. Metadata records include core library catalog elements such as Title, Abstract, and Publication Data; geographic elements such as Geographic Extent and Projection Information; and database elements such as attribute label definitions and attribute domain values.
MSAG (Master Street Address Guide)	A database of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls.
NENA (National Emergency Number Association)	The National Emergency Number Association is a not-for-profit corporation established in 1982 to further the goal of "One Nation-One Number." NENA is a networking source and promotes research, planning, and training. NENA strives to educate, set standards, and provide certification programs, legislative representation, and technical assistance for implementing and managing 9-1-1 systems. www.nena.org
NG9-1-1 (Next Generation 9-1-1)	NG9-1-1 is an Internet Protocol (IP) based system comprised of managed Emergency Services IP networks (ESInets), functional elements (applications), and databases that replicate traditional E9-1-1 features and functions and provides additional capabilities. NG9-1-1 is designed to provide access to emergency services from all connected communications sources, and provide multimedia data capabilities for Public Safety Answering Points (PSAPs) and other emergency service organizations.
NGUID (NENA Globally Unique ID)	A globally unique ID generated and maintained within a GIS database by combining a "locally unique ID" (an alphanumeric string unique within the aggregated local GIS database) and the "Agency Identifier" (a domain representing that authority).
PIDF-LO (Presence Information Data Format – Location Object)	Provides a flexible and versatile means to represent location information in a SIP header using an XML schema.

Term or Abbreviation (Expansion)	Definition / Description
PSAP (Public Safety Answering Point)	An entity responsible for receiving 9-1-1 calls and processing those calls according to a specific operational policy. • Primary PSAP: A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 Control Office. • Secondary PSAP: A PSAP to which 9-1-1 calls are transferred from a Primary PSAP. • Alternate PSAP: A PSAP designated to receive calls when the primary PSAP is unable to do so. • Consolidated PSAP: A facility where multiple Public Safety Agencies choose to operate as a single 9-1-1 entity. • Legacy PSAP: A PSAP that cannot process calls received via i3-defined call interfaces (IP-based calls) and still requires the use of CAMA or ISDN trunk technology for delivery of 9-1-1 emergency calls. • Serving PSAP: The PSAP to which a call would normally be routed. • PSAP: This term is used to denote a PSAP capable of processing calls and accessing data services as defined in NENA's i3 specification, NENA NENA-STA-010, and referred to therein as an "i3 PSAP".
RFC (Request for Comment)	A method by which standard setting bodies receive input from interested parties outside of the working group.
SI (Spatial Interface)	A standardized data replication interface used to publish GIS data to the functional elements that consume GIS data, such as the ECRF, LVF, Map Database Services, etc.
Spatial data	Information stored as coordinates and topology that identifies the geographic location of features and boundaries on Earth, also known as geospatial data or geographic information.

Term or Abbreviation (Expansion)	Definition / Description
URI (Uniform Resource Identifier)	A URI is an identifier consisting of a sequence of characters matching the syntax rule that is named <URI> in RFC 3986 [9]. The characters allowed are from a very limited set: the letters of the basic Latin alphabet, digits, and a few special characters. It enables uniform identification of resources via a set of naming schemes. A URI can be further classified as a locator, a name, or both. The term "Uniform Resource Locator" (URL) refers to the subset of URIs that, in addition to identifying a resource, provides a means of locating the resource by describing its primary access mechanism (e.g., its network "location"). The term "Uniform Resource Name" (URN) has been used historically to refer to both URIs under the "urn" scheme [RFC2141], which are required to remain globally unique and persistent even when the resource ceases to exist or becomes unavailable, and to any other URI with the properties of a name. An example of a URI that is neither a URL nor a URN is **sip:psap@example.com**.
URN (Uniform Resource Name)	A URN is a type of URI. Uniform Resource Names (URNs) are intended to serve as persistent, location-independent, resource identifiers and are designed to make it easy to map other namespaces (which share the properties of URNs) into URN-space. An example of a URN is **urn:service.sos**. RFC 2141
USPS (United States Postal Service)	An independent agency of the United States government responsible for providing mail service in the United States.
UTC (Universal Coordinated Time)	The primary time standard in the world based on the time zone in Greenwich, England. Also known as Zulu or Greenwich Mean Time (GMT). Time provided by National Institute of Standards and Technology (NIST) and United States Naval Observatory (USNO).
XML (eXtensible Markup Language)	An internet specification for web documents that enables tags to be used that provide functionality beyond that in Hyper Text Markup Language (HTML). In contrast to HTML, XML has the ability to allow information of indeterminate length to be transmitted to a PSAP call taker or dispatcher versus the current restriction that requires information to fit the parameters of pre-defined fields.

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8 Recommended Reading and References

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[11] National Emergency Number Association. "NENA E9-1-1 Wireless Maintenance Call Routing & Testing Validation Standard," NENA 57-002, Version 1, June 9, 2007, and "Appendix A – Wireless Call Routing and Testing Validation Worksheet (TVW)", describe how GIS data

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9 Exhibit X

Not applicable

Appendix A – FRA Rail Lines data schema crosswalk

The Federal Railroad Association maintains GIS data on the rail system in the United States, including the Rail Lines data layer which contains the railway network. The data is available from http://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/national_transportation_atlas_database/index.html. This data may be used if no higher quality rail data is available. Before use, it SHOULD be checked for accuracy and completeness in the area of interest, and it MUST be adjusted to meet the schema requirements in Section 3.14, Railroad Centerlines.

Descriptive Name	NG Data Model Field Name	FRA Rail Lines Field Name
Discrepancy Agency ID	DiscrpAgID	None: Will be the 911 Authority adjusting the
Date Updated	DateUpdate	None: Will be the date the 911 Authority performed the adjustment
Rail Segment NENA Globally Unique ID	RS_NGUID	FRAARCID
Rail Line Owner	RLOWN	Rail company identified in RROWNER1
Rail Line Operator	RLOP	Rail company identified in TRKRGHTS1
Rail Line Name	RLNAME	-
Rail Mile Post Low	RMPL	-
Rail Mile Post High	RMPH	-

Table A-1 FRA Rail Lines Data Schema Crosswalk Table

Appendix B – National Hydrography Dataset (NHD) data schema crosswalk

The United States Geological Survey (USGS) maintains the National Hydrography Dataset (NHD) for capturing hydrologic (surface water) features. The data is available from http://nhd.usgs.gov/data.html. This data may be used if no higher quality hydrologic data is available. Before use, it SHOULD be checked for accuracy and completeness in the area of interest, and it MUST be adjusted to meet the schema requirements in Section 3.15, Hydrology Line, and Section 3.16, Hydrology Polygon

Descriptive Name	NG Data Model Field Name	NHD Feature Class and Field Name
Discrepancy Agency ID	DiscrpAgID	None: Will be the 911 Authority adjusting the
Date Updated	DateUpdate	None: Will be the date the 911 Authority performed the adjustment
Hydrology Segment NENA Globally Unique ID	HS_NGUID	NHDFlowline:Permanent_Identifier
Hydrology Segment Type	HS_Type	NHDFlowline:FType
Hydrology Segment Name	HS_Name	NHDFlowline:GNIS_Name
Hydrology Polygon NENA Globally Unique ID	HP_NGUID	NHDWaterbody:Permanent_Identifier and NHDArea: Permanent_Identifier
Hydrology Polygon Type	HP_Type	NHDWaterbody:FType and NHDArea:FType
Hydrology Polygon Name	HP_Name	NHDWaterbody:GNIS_Name and NHDWaterbody:GNIS_Name

Table B-2 National Hydrography Dataset Data Schema Crosswalk Table

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